Coastal Futures 2019
Review and Future Trends

23rd & 24th January
The Royal Geographical Society, London

Delegate Notes



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LET US ORGANISE YOUR CONFERENCE

If you would like to discuss how we can help with your conference administration or require any further information please contact Diana Hunt or Jayne O'Nions

conserve2016@gmail.com | 07759 134801

Welcome to the conference

This information gives the answers to some of the most frequently raised questions that arise at the conferences.

Wi-Fi: The code to access the open network is **RGS-IBG**, no password is needed.

Twitter: If you're tweeting please use #CoastalFutures19 hashtag and follow us at @CF Conf

Access to lecture theatre: The front doors to the lecture theatre will close when the conference starts, if you arrive after this time you will need to enter the theatre via the back doors downstairs or use the seats upstairs.

Questions – Bookings – Receipts – In-house information
If you have any questions during the event about bookings or finances, talk to **Diana Hunt** at the registration desk or for logistics queries, please visit the registration desk where someone will be available to help.

Timing: We will try to ensure that the conference runs on time to allow the allocated time for speakers and as importantly for discussion. A bell will be rung 5 minutes before the start of sessions.

Refreshment Breaks
In running hundreds of events in London we have used two main refreshment breaks during the day that enable us to split the sessions and breaks more evenly. A sandwich buffet is available in the first break and sweet course during the second.

Food
There is always ample food at the event and you can come back for more. Once you have collected your food ***could you move away*** from the serving table. Catering staff are on hand if you need anything, including extra drinks.

Special diets: These should be collected from the drinks station in the Main Hall.

Delegate notes: An electronic copy of the full delegate notes will be emailed to delegates' on the 18th January. We will only be providing the programme and introductory notes in the delegate packs; you may therefore wish to print out the summaries so you can refer to them during the conference.

Networking & delegate lists: Delegate emails & twitter handles will be provided to you on the 18th January to enable networking. You will also be able to talk to the speakers after each session.

Meeting Evaluation forms: There are evaluation forms on the CF19. Please leave these at the registration desk along with your badge when you leave.

Conference Outputs: The conference outputs will be available shortly after the event on **Coastal Futures Website**; we will email the link to access the delegate notes, speaker presentations and other conference outputs.

Valuables: If you have anything you value keep it with you i.e. do not leave laptops unattended.

Before you leave: Check you haven't left anything in the conference hall. Please also take any leaflets or reports.

Programme

DAY 1 – Wednesday 23rd January

8.30 Registration and refreshments

9.25 **Session 1 Chair: Lissa Batey,** The Wildlife Trusts
9.25 **Welcome to the conference** **Bob Earll,** CMS & Coastal Futures

9.30 **Protecting the Environment Post Brexit: What do we need from UK Environmental Legislation & Policy** **Shaun Spiers,** Executive Director, Green Alliance & Chair of Greener UK
9.55 **The 25 year Plan: implementing our marine objectives** **Jon Davies,** Defra, Marine & Fisheries
10.15 **Natural Capital: Can it be operationalised for the marine environment?** **Professor Melanie Austen,** Plymouth Marine Laboratory
10.35 **The Marine Pioneer Project – the Importance of Social Capital** **Aisling Lannin** Marine Management Organisation
10.55 **The Economic Importance of UK Offshore Industry to UK GDP** **Peter Barham** Seabed User & Developer Group

11.15 **Short presentations: Six x 3 min updates: Governance, Social Sciences & Coasts**

- **Joint statement on marine conservation & management - SUDG & TWT, RSPB, MCS and WWF** **Peter Barham,** SUDG **& Lissa Batey,** The Wildlife Trusts
- **The Public Trust Doctrine and its application to the governance of the sea** **Tom Appleby** Associate Professor in Property Law University of the West of England, Bristol
- **Sustainable Development Goals & the Marine Environment** **Professor Mike Elliott**, IECS, University of Hull
- **The Marine Social Sciences Network: An Update** **Emma McKinley,** Cardiff University
- **UK Coastal Governance – Future Insights** **Natasha Bradshaw** University of the West of England (UWE Bristol)
- **Coastal Partnerships 10 Year Review – Highlights** **Amy Pryor,** Thames Estuary Partnership & Coastal Partnership Network & **Alice Watts,** Coastal Partnership Network

11.35 First Break: Sandwiches and refreshments

12.15 **Session 2: Chair: Rowan Byrne,** Mott MacDonald
12.15 **Reimagining the UK's Coastal Communities into a coastal power house** **Tim Morris** Chief Executive, The UK Major Ports Group
12.35 **Partnerships for the Coast – The power of national, regional & local approaches** **Bill Parker** Head of Coastal Partnership East: Great Yarmouth Borough, North Norfolk, Suffolk Coastal and Waveney District Councils

12.55 **Flood and coastal erosion risk management & the practical challenges of adapting to climate Change** **Graeme Smith,** Teignbridge District Council
13.15 **Oceans and human health: Latest findings and a roadmap for European research** **Mat White,** European Centre for Environment and Human Health, University of Oxford
13.35 **Reducing plastic pollution – what are you doing about it?** **Laura Foster & Emma Cunningham** Marine Conservation Society

13.55 **Short presentations: Seven x 3 min updates: Blue carbon, Science, Data & Coasts, plastics**
- **Blue carbon - looking a gift horse in the mouth** **Phil Williamson,** University of East Anglia
- **Why your data matters** **John Pepper,** OceanWise
- **Working together to improve access to marine data** **Charlotte Miskin-Hymas,** MEDIN Marine Environmental Data and Information Network
- **POSEIDON - A Probabilistic Offshore Scour Evolution Model - reducing environmental impacts and costs for offshore windfarm development** **Amy Parry,** Atkins

- **Sand engine design - Applying the *Building with Nature* concept: An innovative solution to coastal management at Bacton** **Claire Gilchrist,** Royal HaskoningDHV
- **Tern it up - furthering the conservation of UK's tern populations** **Leigh Lock,** Senior Species Recovery Officer RSPB
- **Marine Plastics – changing the habits of global shipping** **Alex Hammond,** IMarEST The Institute of Marine Engineering, Science and Technology

14.15 Second break and refreshments

15.00 **Session 3: Chair: Bob Earll,** Coastal Futures & CMS
20 minute presentations: 15 minutes for questions and 5 mins for Q&A
15.00 **Offshore wind: Future prospects** **Helen Elphick**, Senior Development Manager, Offshore Wind The Crown Estate
15.20 **Resolving current environment issues with offshore wind** **Madeline Hodge** Strategic Environment Manager, Ørsted
15.40 **What future for tidal and wave energy in the UK?** **David Jones** Marine Energy Wales

16.00 **Environmental Net gain** **Steve Hull,** ABPmer
16.20 **Restoring our estuarine and coastal environment** **Roger Proudfoot & Jonny Peters** Environment Agency

16.40 **Communicating environmental issues to make a difference** **Chris Rose,** Campaign Strategy
17.05 **Protecting the ocean's final frontiers – the high seas & deep ocean** **Callum Roberts** University of York
17.30 **Wine reception**

Day 2 – Thursday 24th January

8.30 **Registration and refreshments**
9.25 **Session 4: Chair: Lyndsey Dodds,** WWF
9.25 **Welcome to the conference**
20 minute presentations: 15 minutes for questions and 5 mins for Q&A

9.30 **Meeting our international commitments to protect & manage the ocean's resources. The opportunity of the Commonwealth Blue Charter** **Jeff Ardron,** Commonwealth Secretariat
9.50 **Community, conservation and sustainable fisheries in UNESCO Biosphere Isle of Man** **Fiona Gell**, Isle of Man
10.10 **Marine planning in Scotland: Update** **David Pratt,** Marine Scotland
10.30 **Marine Spatial Planning in England: Update** **Clare Kavanagh,** MMO
10.50 **Whose decision counts? Wiser decision-making for our seas** **Diana Pound,** Dialogue Matters
11.10 **IFCAs Update** **Stephen Bolt,** Association of Inshore Fisheries & Conservation Authorities

11:30 **Short presentations: Six x 3 min updates: Engagement, marine planning & science**

- **Shaping the Future, Conserving the Past of a Post-Industrial Seascape: 'SeaScapes' A Case Study of the UK's First Seascape-scale Conservation Initiative** **Veronica Rudd** SeaScapes Partnership
- **Enhancing knowledge exchange and encouraging collaboration between researchers and marine management institutions** **Katherine Yates,** University of Salford
- **Agents of Change: Making Marine Conservation Zones Matter** **Alice Tebb,** Marine Conservation Society
- **Societal engagement and conflict resolution in marine planning – outputs of a Winston Churchill Memorial Trust Fellowship to North America** **Sarah Brown,** C2W Consulting
- **Hindsight and Long-term Surveillance** **David Little** Millford Haven Waterway Environmental Surveillance Group
- **The Marine Ecosystems Research Programme – an update** **Paul J. Somerfield** Plymouth Marine Laboratory

11.50 First Break: Sandwiches and refreshments

12.35 **Session 5: Chair: Sandy Luk**, CEO, Marine Conservation Society

Brexit & The Fisheries Bill

12.35 **Distribution of fishing opportunities, for who?, for why?, for when? and for how much?** **Jerry Percy,** NUFTA The New Under Ten Fishermen's Association

12.55 **Brexit, Fisheries Bill - A seafood industry perspective Andrew Kuyk,** UK Seafood Industry Alliance

13.15 **Brexit & the Fisheries Bill: an environmental perspective** **Helen McLachlan,** WWF-UK

13.35 **Ecologically sustainable scallop fisheries: myth or achievable goal?** **Dr Bryce Stewart** York University

13.55 **Short presentations: Six x 3 min updates Engaging with fishermen, Fisheries & MPAs**

- **Gearing Up – The online tool helping fishermen find selectivity solutions to the Landing Obligation** **Harriet Yates-Smith,** Mindfully Wired Communications
- **Investing in fishermen** **Jim Masters,** Fishing into the Future
- **Sustainable Fish Education** **Felicity Sylvester,** Sustainable Fish Education
- **Sea's the Day: the fishermen of Selsey Bill** **Jane Cunningham**, MPP Project Officer Chichester District Council
- **IFCA Management of Inshore MPAs** **Jamie Small,** The Association of IFCAs
- **The Welsh Marine Protected Areas** **Gill Bell,** Marine Conservation Society

14.15 Second Break

14.55 **Session 6: Chair: Professor Mike Elliott**, IECS, University of Hull

MPAs – What do we want?

[4 x 15 min presentations & 20 mins discussion]

14.55 **The whole site approach – what do we want?** **Jean-Luc Solandt,** Principal Specialist MPAs, Marine Conservation Society

15.10 **National Marine Parks: Background case and discussion** **Professor Martin Attrill** Plymouth University

15.25 **Well managed MPAs in the UK – what does this mean and how do we achieve it?** **Jenny Oates,** WWF-UK

15.40 **Recovery of horse mussel communities in Strangford Lough** **Joe Breen** DAERA, Northern Ireland

15.55 - 16.15 Discussion

16.15 - 16.20 **Conference Closes**

Rationale for the 2019 Coastal Futures Conference Programme

Bob Earll

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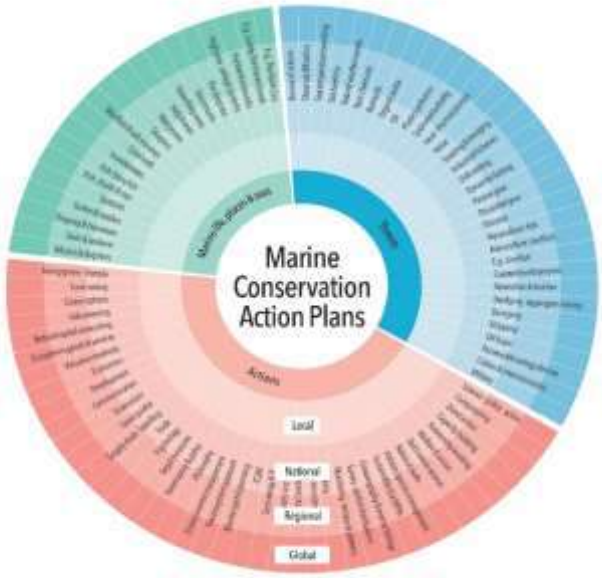
Twitter: **#CoastalFutures19** Check out Coastal Futures Twitter page @CF Conf

Coastal Futures - Exploring the Next Steps

This is the 26th Coastal Futures conference. I could have walked away after 25 years with a tick and a job done, since Coastal Futures 2018 at the Royal Geographical Society was perhaps the most successful yet but three ideas persuaded me to continue.

1. The scale of the challenges in protecting, managing and conserving the marine & coastal environment
The first of these ideas relates to the challenges faced by the marine and coastal environment. My book, *Marine Conservation: People, Ideas & Action*, was being finished when I was making this decision, I concluded that we at least understand the full scale of the environmental challenges we face for many issues at every geographic scale. Engaging more people, from many disciplines, to focus on these issues at various geographic scales is an important goal and that is what Coastal Futures aims to cover.

See the ***Protecting, Managing and Conserving the Coastal & Marine Environment*** *Diagram in the delegate pack*



2. Brexit – Uncertainty & Opportunity – Safeguarding Environmental gains & looking beyond Brexit
The decision to leave the European Union is having the biggest impact on the UK of any event in my lifetime and it has created immense uncertainty. In the late summer of 2018 when the main aims for the conference came together it was clear that this uncertainty would be at a high point in January 2019 and so there was little point in trying to engage senior politicians or civil servants to speak. Brexit related issues will be discussed by many speakers but there is a clear view of the policy landscape moving *beyond* the current debate and the opportunity this is providing. Not least there are major Bills passing through Parliament on the Environment and Fisheries, and commitments to the 25 year Environmental Plan. The need to protect hard won gains from the last 30 years is a priority and this meeting sets out to do this.

3. The Freedom to Experiment: Social media - How we act as individuals – Our Values and Modes of Action - Networking

I decided that if I was to continue these conferences, given the previous two challenges, I needed to explore – *the freedom to experiment* – how the conference could be made more effective. This has included four elements:

Social media – Tweeting: At CF18 275 people Tweeted – 75% of the audience – creating 1.5 million impressions. I'm told that this is impressive and it provides the opportunity to send messages around the world. To explore and harness this potential, Harriet Yates-Smith and her colleagues at Mindfully Wired, have co-ordinated the message slides that will appear from the speakers at the event, enabling their key messages and links to be shared by many people way beyond the conference.

How we act as individuals What Brexit and Trump have taught me is that we can no longer take for granted that the resolution of environmental issues are going to move in the right direction. The audience at Coastal Futures are well informed and hugely experienced and represent a colossal resource that if motivated could achieve a very great deal. In collaboration with the Emma Cunningham, Laura Foster and Chris Tuckett from the Marine Conservation Society we are exploring what more you, the audience, can do in relation to plastic pollution. This is a unique presentation at CF because never before have we tried to challenge and encourage the audience to explore their actions *as individuals* on an issue. The idea has also been to explore this as a model to cover different subjects such as climate change at future events.

Our values and modes of action – Effective Communication Chris Rose, one of our keynote speakers, will be describing how by understanding how audiences think, and their values, we can communicate more effectively to them. With his help we have engaged with Cultural Dynamics to conduct a survey of CF delegates to understand the type of people you are and what drives and motivates you and the way you communicate.

Networking 'Networking' is always at the top of reasons why people attend events like Coastal Futures. Diana Pound from Dialogue Matters has helped me with this. This year we will explore more ways to do this including:

- The contact emails and Twitter handles for delegates are provided in the delegate notes to help encourage people to meet up at the conference – there are lots of landmarks in the building where you can arrange to meet people and we will point these out to you.
- We are asking all the speakers to remain behind in the lecture room after their sessions so that you can meet them to discuss their presentations.

We will be asking you to help us evaluate the results of these experiments so that we can make the meeting more effective in the future. Hopefully the experiments we do at this meeting will lay the groundwork for Coastal Futures to grow and develop more effectively in the future to meet the huge challenges we face.

Main themes at Coastal Futures

Introduction
This is a brief overview of what will be a packed programme and the main themes of the event. Building on the feedback and support for the short presentations, themes mentioned below will be supported by 25 – 3 minute presentations.

Brexit & the Environment: Bills, Plans & Economics
A time of change, uncertainties and opportunity

Whether we like it or not we are living through a period of considerable change and uncertainty and speakers will be reflecting on this throughout the event. It is also a time of opportunity. *Seeing through* this to a time beyond Brexit is key just now. Speakers focussing on this include:

- Parts of the **Environment Bill** (Green Alliance) have just been published by Defra and Shaun Spiers in his keynote will be taking us through key elements of this from governance and principles, to

holding Government to account. This legislation will have profound effects on how we frame our work in the environment for a generation.

- The **25 year plan** is now a year old and Jon Davies (Defra) will be looking at its implications for the marine environment.
- **Natural Capital** has been promoted by Government since 2011 but what does it mean for the marine environment – Mel Austen (PML) will take us through this.
- **Net Gain** is another idea in line with Government's wish to enhance the natural environment and we are in the middle of a consultation on this …. But how exactly will this be operationalised in the marine environment – Steve Hull (ABPmer) will take us through some of the key elements of this.
- In very pragmatic terms the **UK's Offshore Industry** continues to make a huge contribution to **UK GDP**. Peter Barham will discuss recent research that brings our understanding of this up to date.
- A number of Brexit related bills are currently going through Parliament as a result of Brexit including the **Fisheries Bill**. This will also set out our approach to fisheries for many years to come. Will it address the huge concerns regarding the sustainability of fisheries and minimising environmental damage or will it undermine the hard won gains from the last 20 years?

People, Partnership & Pioneering
Building Social Capital to Manage and Protect our Coasts & Seas

In the marine and coastal environment, much more than on land, we have to work *with* people to achieve our goals. The growing recognition of this is reflected in the conference programme which has many examples of how we are *applying* social sciences thinking, its ideas and techniques, to building effective programmes; some of the topics to be covered at the meeting include:

- Developing **social capital** on the marine pioneers - Aisling Lannin (MMO).
- How the oceans and coasts affect **health & well-being** – Mat White (Exeter University).
- Looking at **how communities can build** on key sectors like Ports (Tim Morris) or around fishing and the UNESCO Biosphere of the Isle of Man (Fiona Gell).
- **Building coastal partnerships** at local, regional and national level (Bill Parker & Amy Pryor) to develop and deliver a host of programmes.
- There will be presentations on **communication and campaigning** with Chris Rose, and **networking and stakeholder dialogue** with Diana Pound.
- We will be raising the level of **social media coverage** of the event with Harriet Yates-Smith (Mindfully Wired) and looking at the audiences' **approaches to action** (Cultural Dynamics).
- We will be reflecting on how **social sciences** are playing an ever greater role in marine management across many areas with Emma McKinley (Cardiff University).

Protecting & Managing the Marine Environment – What do we want?
Tackling the huge environment challenges we face

We use the coastal and marine environment to meet many of our needs and this is reflected in the work of many sectors. The development of marine spatial planning over the last 15 years helps us put into context the way we both manage and protect the marine environment in the seas around our shores. But huge challenges remain and this is reflected in many of the presentations which explore the steps different sectors are taking. Some of the challenges to be covered at the meeting include:

- Over the last 20 years efforts world-wide have grown to provide the overall context – **marine spatial planning** – into which we can integrate our actions. Coastal Futures continues to promote the importance of this with presentations from Jeff Ardron (Commonwealth), Fiona Gell (Isle of Man), Clare Cavanagh (England, MMO) and David Pratt (Marine Scotland).
- The damaging effects of storms and sea level rise causing **flooding and coastal erosion** is ever present (Graeme Smith, Teignbridge Council) but there is growing evidence that **the effects of climate change** is beginning to accelerate the resulting damage. Set in this context Jonny Peters & Roger Proudfoot (Environment Agency) will explore how we might **restore our coastal habitats**.
- **Offshore wind** is setting records apace and is one of the major ways we can mitigate climate change, Helen Elphick (The Crown Estate) will describe the ongoing development, and Madeline Hodge (Orsted) the progress with resolving ongoing environmental issues. We will also be exploring whether there is any future for the other types of **wave & tidal renewables** for UK plc.

- The growing levels of **plastics pollution** are worrying and MCS will be looking at this in terms of what *you are doing* to combat this using the results (of) from 590+ survey returns; Alex Hammond (IMarEST) will look at what global shipping is doing in relation to this.
- **Brexit and the Fisheries Bill** are providing opportunities to what we want in a post CFP fishing regime; the many facets of this will be covered by Jerry Percy (NUTFA) and will look at quota & ownership, environment (Helen McLachlan, WWF-UK) and seafood industry (Andrew Kuyk, Provision Trade Federation). The **work of the IFCAs** has developed significantly over the last 10 years and Stephen Bolt (AIFCA) will look at this in the current context of potentially extended geographic coverage.
- The destruction caused by scallop dredging to seabed habitats is now very well understood. **Is it possible to have an ecologically sustainable scallop fishery**? Bryce Stewart will explore this.
- Although we now have a network of marine protected areas **what do we really want from our MPAs?** The whole site approach (Jean Luc-Solandt, MCS), the *recovery* of the sea bed horse mussel communities (Joe Breen), the management framework (Jenny Oates. WWF-UK) and Marine Parks (Martin Attrill, Plymouth University) will explore these ideas.
- **The high seas and deep seas** are still the wild west of marine environment with major extractive industries like fishing and deep ocean mining threatening to wreak a huge toll on their natural resources which will last for generations to come. Callum Roberts (York University) will describe some of the steps being taken to try to address this.

DAY 1 – Wednesday 23rd January

Protecting the Environment Post Brexit: what do we need from UK environmental legislation & policy

Shaun Spiers
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The European Union has played a major role in protecting the UK's environment over the last 45 years. But the EU is not perfect, and in some areas, notably the Common Agricultural Policy, it has arguably held back environmental progress.

It is therefore possible, as the Environment Secretary, Michael Gove has argued, to see Brexit as an environmental opportunity.

Greener UK, a coalition of 14 environmental groups, has tracked the progress of Brexit to assess whether these hopes are likely to be realised. Our latest risk tracker shows that huge uncertainty remains and that no area of policy is free from risk.

By the time the conference takes place, Parliament will have voted on the withdrawal agreement between the UK and the EU. Greener UK has been clear that a no deal Brexit would be disastrous for the environment, but we have not taken a position on the withdrawal agreement. Instead, we have set out a number of benchmarks against which to judge any proposed deal.

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25 Year Environment Plan: implementing our marine objectives

Jon Davies
Defra Marine & Fisheries
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The 25 Year Environment Plan (YEP) published in January 2018 sets out UK Government action to help the natural world regain and retain good health. It calls for an 'environment first' approach to how we care for our land, rivers and seas to leave these ecosystems in a better place than when we inherited them. A core aim of the 25 YEP is adopting a 'natural capital' approach to environmental management – a world first.

The plan sets out 6 goals with targets to restore the value of our assets and increase the benefits from the environment alongside 4 goals with targets to manage human pressures that may impact these benefits. The plan outlines new tools to help our implementation of policy to achieve our goals.

	GOALS	TOOLS
Assets	Clean Air	Pioneers
	Clean Water *	Net Gain
	Thriving Wildlife *	Natural Capital Trust
Benefits	Environment Hazard	Green Finance
	Sustainable Resources *	Indicators
	Enjoyment of Nature	Annual Report
Pressures	Adapt Climate Change	5 Year Review
	Minimise Waste	Independent Body
	Exposure to Chemicals *	Bespoke Acts (Legal)
	Biosecurity	
DOMESTIC - Sustainable fisheries policy • Achieve Good Environmental Status • Well managed MPA network		
INTERNATIONAL - Global leadership • Support developing nations • Lower environmental footprint		

Those marked with * have a direct marine targets

For the marine environment, the plan states our ambition to secure clean, healthy, productive and biologically diverse oceans and seas. We aim to improve the state of the marine environment by achieving Good Environmental Status, supported by a network of well-managed Marine Protected Areas, together with a sustainable fisheries policy.

The 25 YEP reaffirms the UK Government's intention to provide global leadership by example in tackling climate change and protecting international biodiversity. We will work in partnership with our Overseas Territories to improve our understanding and protection of their marine natural capital assets.

Defra has achieved some notable successes in 2019 in starting the delivery of the 25 YEP:

- A consultation for the third tranche of MCZs. This tranche is an ambitious and comprehensive set of sites which will substantially complete our contribution to the ecologically coherent network of MPAs. The site designations will be announced and in place by June 7th 2019.
- Published our new policy for sustainable fisheries
- New Fisheries Bill in parliament – the first for over 40 years
- Updating the UK Marine Strategy ahead of a consultation in 2019
- The England South Marine Plan was published in July 2018, covering the marine area from Folkestone, Kent to the River Dart, Devon. Work is well underway to develop the remaining marine plans for the north-west, north-east, south-west and south-east.
- Establishing the Commonwealth Clean Oceans Alliance to show global leadership on tackling marine plastic pollution.
- Marine Pioneer Projects in Devon and Suffolk
- Developed an indicator framework to report on our progress with the 25 YEP, including a suite of marine indicators.

The 25 YEP describes other broad policies and new initiatives to help implement a natural capital approach in both our terrestrial and marine environments. These include improving public engagement with the natural environment, seeking new, innovative approaches to blending public and private finance for environmental improvement, and working with developers to achieve an environmental 'net gain' post-development. We are working with our terrestrial colleagues to investigate the application of these tools to the marine environment.

Natural Capital: Can it be operationalised for the marine environment?

Professor Melanie Austen
Head of Science - Sea and Society, Plymouth Marine Laboratory
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Natural capital is a fundamental aspect of the EU's Biodiversity Strategy, the UK's Environment and Fisheries Bills, and England's 25 Year Environmental Plan as well as international legislation such as the Convention on Biodiversity. Natural capital approaches, as expressed by e.g. the Natural Capital Committee, present a progression in ecosystem service thinking that has been in development for many years. They aim to bring together an understanding of the relationship between the state of the environment, what the environment does for people in terms of its services, and how important (valuable) these services are to society. There is an increasing imperative to apply natural capital approaches to marine ecosystems e.g. to develop policy, and management measures, and to evaluate the success of these.

The positives
Researchers and those who engage in thinking about or managing the marine environment are accustomed to systems thinking rather than the species orientated approaches customarily adopted on land; this is an advantage. We now have considerable marine data and modelling tools available to support operationalising the natural capital approach. We already have marine management legislation in place that would benefit from, and could be used to promote marine natural capital approaches.

The 'buts'
We still need to implement natural capital approaches in the marine environment but this will need resourcing in terms of time and funding. It is likely to require changes in our approaches to monitoring and managing the marine environment and the priorities that we set. We need to accept that it won't (initially) be perfect.

Give it a go!
We can and already are trying to implement marine natural capital approaches at large (national) and small scales (e.g. Marine Pioneer). We will find (more) key data and tools gaps, but we need to start to fill them. We know that monetary valuation won't always be possible due to data gaps, but even natural capital thinking can help to support better marine decisions than some of our current approaches. Natural capital approaches do require interdisciplinary collaboration. We also need to work across sectors (academic, public, industry, eNGO) to pool resources, thinking and approaches.

Marine Pioneer project – The Importance of Social Capital

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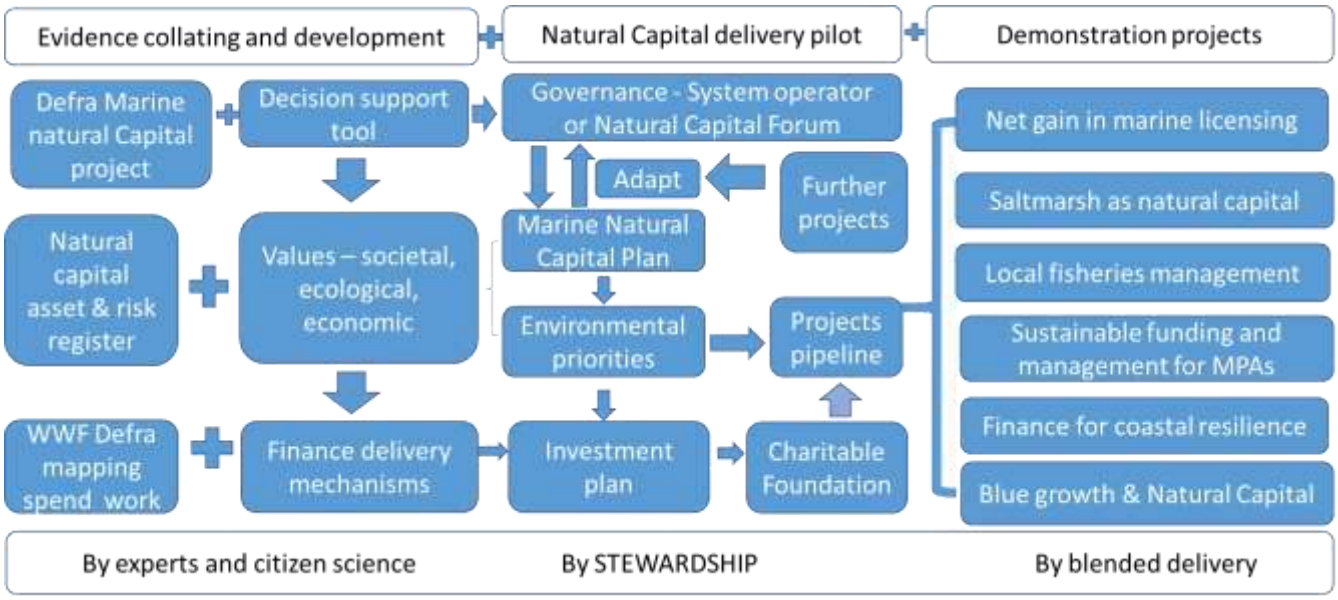
The concept of social capital does not have a fixed meaning or one clear definition. In broad terms it refers to social 'stocks' such as networks that people use to solve common problems. Generally the main focus is on social relations that produce socially positive outcomes. There are debates about whether people's social relations fit into the 'capitals' approach, given that such relations do not for the most part function in the same way as economic capital. For example, social capital cannot readily be traded on the market due to its relative intangibility through an economic lens. Nevertheless, if people 'invest' in social relations or networks it is generally accepted that they will reap some reward. A more strategic and ongoing approach to 'investment' is thus thought necessary. This talk will map the concept of social capital on to the work of the marine pioneer.

The marine pioneer began in earnest in spring 2017 and has been tasked by Defra, along with three other pioneers, to find effective ways to deliver the 25 Year Environment Plan (25YEP). The pioneers are doing this in four ways; testing a natural capital approach, integrating planning and delivery, exploring sustainable finance options and sharing lessons. The marine pioneer is using a partnership approach in the two locations of Suffolk and North Devon to explore the 25YEP ambition to improve and restore the environment. Existing partnerships are being used, with the addition of location specific steering groups. Steering groups are made up of the people leading local evidence development, demonstration projects and 25YEP natural capital delivery pilots (see diagram for overview of individual projects within the programme).

The marine pioneer, following the 25YEP, is about people's relationship with nature. The 25YEP challenges some of our norms and attitudes to using natural resources. In general the focus of current environmental legislation has been on maintaining the status quo in the environment, but the 25YEP aims to improve and restore the environment. The marine pioneer is testing some potential ways to transition to this type of stewardship. There are three major work areas that are funded; evidence development, demonstration projects and a local delivery pilot. The majority of the funding comes from non-government sources, such as NERC, WWF and The Blue Marine Foundation.

The marine pioneer programme relies on co-design and co-delivery by the steering groups, co-management between local partnerships, government and non-government agencies and blended investment by government and non-government therefore relies heavily on social capital The Marine Pioneer has brought people together to deliver a shared vision for two local places. Existing and new relationships have been developed to create trust, networks and cooperative activities. Social values are a focus for some of the evidence development and demonstration projects. While work on governance aims to demonstrate how to be inclusive, representative, fair and socially just. Making sure that social values and social science expertise is part of the programme should provide more insight into how social capital can support improvements and restoration of marine natural capital.



An update on the socio-economic benefits of marine industries in the Seabed User and Developer Group

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The presentation will provide up to date information regarding the economic and social value of the marine industries within the SUDG.

Background

The Seabed User and Developer Group (SUDG) represents some of the UK's key marine industries, namely: oil and gas, renewable energy, marine aggregates, ports, submarine cables, recreational boating and carbon capture and storage (CCS). SUDG understands that the sea around our shores is a sensitive environment that needs to be valued and protected, in addition to being a working environment that makes a substantial contribution to society.

A detailed assessment of the economic contribution of UK marine industries was last produced by Pugh in 2008. Since that time there have been significant changes in the way the UK marine environment is managed, largely as a result of implementation of the Marine & Coastal Access Act and equivalent devolved legislation as well as major changes in the levels of some marine activities such as oil and gas production and offshore wind energy. Over this period there has also been greater recognition of the social values associated with marine and coastal environments and the mainstreaming of natural capital and ecosystem services thinking.

There is good knowledge of the environmental impacts of marine activities through the well understood principles behind Environmental Impact Assessment (EIA); however, there is less reliable and consistent data regarding the value of marine industry activities to society or suitable metrics and little consistency in how this information can be applied. In addition, in line with the thinking of the Natural Capital Committee, there is, rightly, a growing move towards ensuring that there is a fuller understanding of the value of natural capital assets in decision making. Such an approach is potentially central to the delivery of the UK Government's 25 Year Environment Plan released in early 2018.

This presentation will provide an up to date picture of the economic and social value of the SUDG marine sectors and potential benefits of their contribution to sustainable development.

Short Presentations: Six x 3 min updates: Governance, Social Sciences & Coasts

Sea Bed User and Developer Group, Marine Conservation Society, RSPB, The Wildlife Trusts and WWF - Joint Statement on Marine Conservation

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Marine industry and conservation groups have been working together for many years sharing the same objective: to achieve a sustainable marine economy and to protect and restore the marine environment through a well-managed, ecologically coherent network of Marine Protected Areas (MPAs) in appropriate locations.

Whilst it remains for the government to determine exactly how this is done, we believe that following Brexit the government has the unique opportunity to reflect on the legislative and regulatory frameworks best suited to delivering its ambitions, as laid out the in the 25-year Environment Plan, and obligations for the environment, society and the economy. New 'post-EU' legislation could emerge that not only replaces EU mechanisms, if necessary, but also creates a clear vision to balance sustainable development with effective protection and restoration of the marine environment and sets out the mechanisms and timeline needed to deliver this.

Gradual long-term changes in the marine environment, coupled with long-established calls from industry for a clearer, swifter and more consistent regulatory process, point to opportunities to improve the current approach, which would benefit both the economy and the environment.

The enclosed Joint Statement on Marine Conservation within delegate packs provides detail as to how statutory nature conservation bodies (SNCBs), regulators, industry, Non-Government Organisations (NGOs) and other relevant organisations should work more closely together to ensure transparent, consistent and joined-up consenting decisions are made.

The Public Trust Doctrine and its application to the governance of the sea

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The public trust doctrine is a key feature of natural resource law, it stems from English common law and was then developed later particularly in the US. Each US state has a different interpretation but essentially the doctrine established ownership and management duties on states for the foreshore, navigable rivers and lakes, water rights, water quality and even air. These maintain not just public access but also the method of sale and even whether natural resources can be sold. Although originating in the UK, the public trust doctrine is not largely acknowledged by the UK system, but to some extent hides in plain sight: for instance, the Crown Estate Commissioners, the body which manages many Crown rights in England and Wales, have a specific set of duties to manage those Crown rights in the public interest which arguably are similar to those implied by the public trust doctrine. As a creature of the common law these rights have been understood on a case by case basis in the US, but in the UK we have a less litigious culture (and far less land) so the duties on managers are still subject to an element of the unknown. The public trust is however gaining a foothold back in the UK, the Community of Arran Seabed Trust, for instance, used public trust arguments when calling for equitable management of the seas around Arran. Because of devolution, changes in regulatory approach resulting from Brexit (with less reliance on strategic legislation) and greater pressure on resources it is likely the public trust doctrine will face further examination over the coming few years in particular:

The Scottish Crown Estate Act 2019 – potentially places weaker management duties on the managers of the Scottish Crown Estate than the Crown Estate Act 1961 or the common law

The UK Fisheries Bill - is currently silent as to the ownership mechanism of the UK fishery, and places relatively weak duties on the Secretary of State with respect to its management. The Blue Marine Foundation have used public trust type arguments to strengthen the duties over Ministers in the draft Bill. This is vital because, since the case of *United Kingdom Association of Fish Producer Organisations v Secretary of State for the Environment, Food and Rural Affairs* [2013] EWHC 1959 (Admin) 9, there is a lack of clarity over the extent to which the UK marine fisheries are publicly or privately owned, and the terms of any ownership. This is incompatible with public trust duties which would force clarity on that relationship.

With respect to the amendments to the draft Fisheries Bill see:
https://publications.parliament.uk/pa/bills/cbill/2017-2019/0278/amend/fisheries_rm_pbc_1207.22-28.html Clause 20.

UWE will be publishing further work on this in the coming year, in particular we have a forthcoming paper in the *Journal of Water Law* by Sir Crispin Agnew QC, Thomas Appleby and property lawyer, Emma Bean looking at the duties on the Scottish Crown with respect to the management of the public fishery.

With respect to fish quota see: Appleby, T. , Cardwell, E. and Pettipher, J. (2018) Fishing rights, property rights, human rights: The problem of legal lock-in in UK fisheries. *Elementa: Science of the Anthropocene*, 6 (1). p. 40. ISSN 2325-1026 Available from: http://eprints.uwe.ac.uk/36345

Sustainable Development Goals & the Marine Environment

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The UK, like most countries, has signed up to the 17 UN Sustainable Development Goals proposed by the UN Development Programme (UNDP) and agreed in 2016 (see http://www.undp.org/content/undp/en/home/sustainable-development-goals.html). The UK now has to demonstrate its role and means of achieving these by 2030 and arguably the SDG reach across all aspects of Government policy. Although marine and coastal resources, their protection and exploitation stretch across most, if not all, of the SDGs, of greatest relevance is SDG14 *Life Below Water*. Each SDG is accompanied by targets and each of these requires indicators aimed to show if the SDG has been met (Table 1). Cormier & Elliott (2018) show that unless such targets and indicators are robust and quantitative, i.e. SMART (specific, measureable, achievable, realistic and time-bounded) then it will not be possible to show whether management measures have achieved the desired aims and objectives. They emphasized that the Targets are so high level and non-specific that they are aspirational rather than suitable for management initiatives. In addition, the likelihood of meeting these targets is highly unlikely (e.g. does anyone believe that Target 14.1 will be achieved by 2025?!)

Table 1 SDG14 Targets and Indicators

TARGETS	INDICATORS
14.1 By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution	14.1.1 Index of coastal eutrophication and floating plastic debris density
14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans	14.2.1Proportion of national exclusive economic zones managed using ecosystem-based approaches
14.3 Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels	14.3.1 Average marine acidity (pH) measured at agreed suite of representative sampling stations
14.4 By 2020, effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices and implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics	14.4.1 Proportion of fish stocks within biologically sustainable levels
14.5 By 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and	14.5.1 Coverage of protected areas in relation to marine areas

international law and based on the best available scientific information	
14.6 By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, eliminate subsidies that contribute to illegal, unreported and unregulated fishing and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation	14.6.1 Progress by countries in the degree of implementation of international instruments aiming to combat illegal, unreported and unregulated fishing
14.7 By 2030, increase the economic benefits to Small Island developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism	14.7.1 Sustainable fisheries as a percentage of GDP in small island developing States, least developed countries and all countries
14.A Increase scientific knowledge, develop research capacity and transfer marine technology, taking into account the Intergovernmental Oceanographic Commission Criteria and Guidelines on the Transfer of Marine Technology, in order to improve ocean health and to enhance the contribution of marine biodiversity to the development of developing countries, in particular small island developing States and least developed countries	14.A.1 Proportion of total research budget allocated to research in the field of marine technology
14.B Provide access for small-scale artisanal fishers to marine resources and markets	14.B.1 Progress by countries in the degree of application of a legal/regulatory/policy/institutional framework which recognizes and protects access rights for small-scale fisheries
14.C Enhance the conservation and sustainable use of oceans and their resources by implementing international law as reflected in UNCLOS, which provides the legal framework for the conservation and sustainable use of oceans and their resources, as recalled in paragraph 158 of The Future We Want	14.C.1 Number of countries making progress in ratifying, accepting and implementing through legal, policy and institutional frameworks, ocean-related instruments that implement international law, as reflected in the United Nation Convention on the Law of the Sea, for the conservation and sustainable use of the oceans and their resources

The EU, and by extension, the UK with or without Brexit, aims to achieve SDG14 through the Marine Strategy Framework Directive (MSFD) and related Directives (Cavallo et al., 2016, 2018; Boyes and Elliott, 2014, 2016); as such the UK and the Devolved Administrations will have to call on the plethora of statutory bodies charged with managing the marine environment (Boyes and Elliott, 2015). Implementing the MSFD in turn relies on OSPAR and the EEA and as such the EU has adopted 5 indicators via EUROSTAT (https://ec.europa.eu/eurostat/web/sdi/life-below-water):

- Surface of marine sites designated under NATURA 2000 (source: DG ENV, EEA) (sdg_14_10)
- Estimated trends in fish stock biomass in NE Atlantic (source JRC-STECF) (sdg_14_21)
- Assessed fish stocks exceeding fishing mortality at maximum sustainable yield (FMSY) in North East Atlantic (source: JRC, STECF) (sdg_14_30)
- Bathing sites with excellent water quality by locality (source: EEA) (sdg_14_40)
- Mean ocean acidity (source: EEA) (sdg_14_50)

It is questioned whether (a) these 5 are sufficient to satisfy the SDG14 targets and indicators, and (b) whether these 5 indicators are just those already being used and so do not require further effort by EU states. In addition, the UK and all countries will also have to ensure that these actions link with the UN Decade of the Oceans 2021-2030, the G7 marine aims, and the World Oceans Assessment II.

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Hummel, C., Poursanidis, D., Orenstein, D., Elliott, M., Adamescu, M.C., Cazacu, C., Ziv, G., Chrysoulakis, N., van der Meer, J., Hummel, H., (2019). Protected Area management: fusion and confusion with the Ecosystem Services approach. *Science of the Total Environment* 651: 2432-2443.

The Marine Social Sciences Network

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Following our launch at the Greenwich Maritime Centre Society and the Sea 2018 conference, the Marine Social Sciences Network is a growing community, aiming to facilitate interdisciplinary knowledge exchange between diverse stakeholders and recognise the challenge it brings. The Network is establishing an active community of researchers, policy makers and practitioners from across the marine and coastal sector with a view to increasing awareness and understanding of the integral role that social sciences can have in management and decision making for our global seas and coastline. The Network is an international platform for the emergent marine social science community, facilitating collaboration and dialogue between a range of disciplines, including the marine social and natural science, as well as the arts and humanities. With two overarching objectives of supporting communication and improved coordination, and enhancing and improving capacity, in marine social sciences, the Network will provide a collective voice for those working across marine social science research and practice, raising the profile of the value of this work and positioning marine social sciences as crucial evidence within international marine and coastal management and policy development.

To find out more about the Marine Social Sciences Network, or to sign up to our quarterly newsletter, follow us on Twitter - @MarSocSci, email us on info@marsocsci.net and keep up to date by checking in with us on our website – www.marsocsci.net.

UK Coastal Governance – Future Insights

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"We are an island nation with our backs to the sea…we need to transition to a better and more sustainable coastal future. The complex web of governance is daunting."

Research was launched in Autumn 2017 to review and explore existing and new methods to support coastal governance in the UK. The one-year data collection phase of this research, involving over 170 experts, was completed in Autumn 2018. Current coastal governance arrangements have been assessed, focusing on the role of participatory and collaborative governance mechanisms and their socio-legal context to improve coastal stewardship.

Headline Recommendations

Initial results based on the final verification survey, include the following headline recommendations. Participants expressed >70% consensus around the following needs:

- A single overview role for coastal matters.
- Statutory coastal plans.
- Champion local collaborative efforts.
- Encourage trust by investing in local communities and communication effort.
- We need vision – austerity is not a vision.

"Governance should be at a scale that links people's sense of place with the coastal ecosystem".

This ongoing research is part of a PhD funded by the International Water Security Network/Lloyds Register Foundation.

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http://www.watersecuritynetwork.org/uk-coastal-governance/

Focus on the Coast – article for the IES journal *environmental SCIENTIST* (October 2018)
http://www.the-ies.org/resources/deeper-plastic-issues-marine

Podcast: UK Environmental Law Association (October 2018)
https://theplanetpod.com/planet-pod-talks-wild-law-with-ukela/

Blog: Integrated Coastal Management: Comparing experiences South Africa & UK (July 2018)
http://www.watersecuritynetwork.org/integrated-coastal-management-comparing-the-experiences-of-south-africa-and-the-uk/

Blog: Reflections on the English Coastal Challenge Summit 2018 (April 2018).
http://www.watersecuritynetwork.org/reflections-on-the-english-coastal-challenge-summit-2018/

Coastal Partnerships Network (CPN) – 10 Year Review

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"We need to give the coast its own identity, not split between terrestrial and marine policy, planning and management structures or between social, economic and environmental agendas."

The Coastal Partnerships Network was set up as a national working group in 2006 and has remained a volunteer led umbrella body facilitating knowledge exchange between Coastal Partnerships nationally and ensuring representation at a national level. The first audit of Coastal Partnerships was published in 2008 (Stojanovic & Barker, 2008). Since then two other surveys have been completed, one commissioned by the Marine Management Organisation in 2012 to investigate how Coastal Partnerships could assist with marine planning engagement and one other in 2014 as yet unpublished.

This 10-year review builds on the original 2008 survey to look at how Coastal Partnerships have fared over that time: what has changed, what have been the challenges and opportunities and what do we want to achieve in the future. The report is still being worked on and will be published later this year and we plan to do an annual review as part of the Coastal Partnerships Network Annual Forum. In the meantime, here are our headlines:

- Number has increased – partnership working still needed and actively sought by funders
- Diversity of work portfolio and governance has increased
- Public sector austerity has led to some loss & amalgamation of partnerships
- Work driven by availability of funding - more project focussed, less core work
- Lack of central Government funding in England and Wales – lessons to be learned from Scotland.

Further information

Stojanovic, T & Barker, N (2008) Improving Governance through local Coastal Partnerships in the UK. *The Geographical Journal*, Vol. **174**, No. 4, pp. 344–360

Boosting the UK's trade capability and creating a new deal for coastal communities

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Context: Ports as an engine for jobs, investment and opportunity in coastal communities

- ***Ports are the UK's predominant gateways with the world***. Around 95% of all goods entering and leaving the UK moved by sea (see note 1). Ports are the foundations for enabling this trade and providing each of us with many of our daily needs.
- ***Ports are key catalysts for investment and jobs in their local regions***. Many coastal regions too often suffer from high levels of economic and social hardship (see note 2).
- ***Ports provide over 100,000 high value jobs throughout the UK***. Jobs in the ports sector are 47% more productive than the UK average (see note 3), and often significantly better paid than local averages.
- ***They support large numbers of supply chain jobs.*** Each direct job in the ports sector supports at least 6 in the broader economy.

- ***The positive benefit of ports extends to their surrounding areas***. The surrounding hinterlands benefit as ports develop their broader estates and local land for productive use – logistics parks, fulfilment centres, manufacturing facilities, even fil studios!
- ***Port connectivity benefits coastal economies more widely***. The wider infrastructure development – such as road and rail connectivity – made to support port development can also open up a range of more general economic and business activity for coastal communities. Each pound spent on a road scheme connecting a port can add more than four pounds of value for the wider local economy through improving conditions for business and tourism (see note 4).
- ***Truly sustainable positive impact***. Recognising that many ports are located in areas that are environmentally important, such port growth must be pursued in a way that fully supports long term development across all pillars of sustainability – economic, environmental and social.
- ***Ports are major investors in UK infrastructure***... Ports already collectively invest more than an estimated £600 million pounds a year in ports and their surrounding areas (see note 5).
- ***…who want to do more***. Port operators are ambitious to continue and grow this strong record of investment, adding significantly to the UK £7.6bn of value directly contributed to the UK economy by the ports sector.

Capturing the opportunity to boost jobs and prosperity in our Coastal Powerhouse

The ports sector sees 3 key areas of focus to capture the opportunity for more investment in port and coastal areas:

1. ***Planning and development rules***
    a. Some technical aspects of current port planning rules can be tweaked to increase the potential for more higher value jobs
    b. There's potential to clarify and streamline some of the current rules
    c. We should use what works well now more widely and effectively
    d. Let's look at step change opportunities – specific recognition of coastal communities, use of economic development zones
2. ***Coastal and port connectivity***
    a. Prioritising key freight corridors for trade
    b. Increasing focus on the benefits of trade in connectivity assessments
    c. Improving the incentives for modal shift
3. ***Sustainability framework*** – high standards and also work with development
    a. Ensure socio-economic factors have the appropriate weighting in assessments
    b. Reduce duplication in environmental assessments and allow more flexibility in mitigation
    c. Take a multi-stakeholder approach to solving key challenges like air quality.

Ports recognise that these actions can only achieved through working together and look forward to doing so.

Note 1: UK Port Freight Statistics: 2016 (Revised), Department for Transport, 2017, page 3
Note 2: For example, see "Living on the edge: Britain's coastal communities", the Social Market Foundation, September 2017
Note 3: "The economic contribution of the UK ports industry: A report for Maritime UK" – CEBR, September 2017
Note 4: See for example the Heysham – M6 link road project
https://heyshamlink.lancashire.gov.uk/background.aspx
Note 5: UKMPG analysis of accounts of major ports and estimate for ports handling the residual 11-12% of UK port traffic

Partnerships for the Coast – The power of national, regional & local approaches

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According to the Collins on-line dictionary 'partnership' is one of the 4,000 most used words within the English language which has in excess of 700,000 listed words.
The definition however is less than helpful:
'*Partnership or a partnership is a relationship in which two or more people, organisations, or countries work together as partners*'.

In view of how much this word is used and the fact that most of us are in some form of either professional or personal partnerships perhaps we should be looking to develop this concept to a more nuanced level to help define what we mean as partnership. Whilst the role and function of partnerships are complex and diverse, through examination of 4 different partnerships ranging in scale from; a very local community-based level where a community group is championing the greater resilience of an estuary, through a county wide coastal forum bringing together a range of community groups with risk management authorities and other parties, the partnership between four local authorities coastal management resource into one team through to a national scale bringing together joint interests from across the country. Some of the common threads can be distilled and perhaps a different picture of partnerships can be formed. It will also highlight the importance of the 'interconnectedness' of multiple partnerships.

This presentation will conclude with an alternative picture of how partnerships could be seen.

Web-links and/or references

https://twitter.com/CPE_NandS
www.coasteast.org.uk
www.lgacoastalsig.com

Flood and coastal erosion risk management & the practical challenges of adapting to climate change

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The role of Coastal Local Authorities is complex, multi-sectoral and typically includes that policies and management actions are considered in light of processes, statutory functions or responsibilities such as Planning, Economic Development, Environmental Health, Engineering perspectives, best practice guidance and budgetary considerations. Many actions are also determined by local priorities informed through engagement with communities and debate by elected representatives, or subject to public scrutiny and challenge form sectoral interests.

Councils can be significant Landowners or Coastal Asset owners, operate as Harbour Authorities, Competent Authorities as well as being local developers and having roles within Coastal Health and Wellbeing, Licensing, Tourism, Transport, Litter free initiatives, Beach management, Resort management, and Water quality for both Bathing Waters and Shellfisheries.

One of the many challenges is to navigate a considered path through a coastal zone which is itself dynamic in a changing climate. Arguably the key strategic process for determining what activities

occur where on the coast both spatially and temporally are the second-generation Shoreline Management Plan processes and resultant policies (SMP2). These set out the strategic present day to 100-year direction of travel for coastal management, subject to economic and environmental assessments, and apply to every distinct length of England's coastline.

Recently there have been several recommendations to undertake a review of the SMP2 policies, including the National Infrastructure Assessment (NIC 2018), the Government's 25 Year Environment Plan (HM Government, 2018[1]), and the Government's National Adaptation Programme (HM Government 2018[2]).

As all coastal Local Authorities are about to lead or be directly engaged in a review of the twenty current Shoreline Management Plans (SMP2) it is timely to consider the challenges ahead to adapt to a changing coastline and incorporate the findings of several recent key publications including;

- Managing the coast in a changing climate – Committee on Climate Change, October 2018
- National Planning Policy Framework – Ministry of Housing, Communities & Local Government, July 2018 (Coastal Change s.166-169)
- Together with the current renewal of Defra's National Policy Statement for FCRM, the Environment Agency's developing FCRM Strategy for England and the beginnings of the process to shape a new FCRM capital investment programme from 2021.

The presentation will cover the intention of the process to produce a unified national approach but recognise the challenges of implementing far reaching policy objectives in real world local coastal communities, sediment cells and ecosystems. Using examples drawn from the 400km South Devon and Dorset SMP at Slapton, Dawlish and Sidmouth the need for increased engagement, informed debate and an understanding of the requirement to adapt to change should become apparent.

Oceans and human health: Latest findings and a roadmap for European research

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This presentation will cover:

- Some of the threats to human health and wellbeing from the marine environment
- Some of the benefits we have found for health and wellbeing in the UK
- The work we are doing as part of BlueHealth and Blue Communities across 22 countries globally
- How YOU could get involved in shaping the EU's research agenda on Oceans and Human Health

BlueHealth: https://bluehealth2020.eu/

Blue Communities: http://www.blue-communities.org/Home

Seas, Oceans and Public Health in Europe: https://sophie2020.eu/

Reducing plastic pollution – what are you doing about it?

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The growth of public awareness over the last two years on marine plastics has been remarkable. We wanted to see how it had influenced those with links to the marine and coastal environment in what actions they were taking within their own lives. Plastics pollution, perhaps more than many other topics, lends itself to individual actions. There are huge numbers of examples of people taking a very wide range of actions from weaning themselves from plastics in their everyday lives to advocacy with suppliers and within their own organisations to traditional litter picks. Individuals like the round the world yachts woman Ellen McArthur … have made huge contributions to awareness & action.

We decided to explore this further by undertaking a survey of professionals and people working in the coastal, marine and water sector using the CMS email network (as well as some social media posts). The survey went to approximately 8750 people and 590 responded. We asked people their opinions on what action they are taking, whether they have enough information and what prevents them from taking more. A preliminary report summarising the results is to come and will be available to download from the MCS website here. Some of the headline points were:

- Over 40% have become aware of the issue within last 2-5 years which is interesting because it is in line with rise in media and focused attention on the subject.
- Top 3 that motivates action: Concern about the environment (97%*), concern about marine plastics (93%*) and sustainability (92%*).
- Top 3 barriers to action: Limited availability in local shops/supermarket (86%*), lack of alternatives (79%*), and cost (43%*).
- Interestingly there was a very high take-up of action on 7 of the 10 items we asked in question seven, the harder changes included taking reusable cutlery and using our own containers for produce e.g. meat and cheese.
- In addition to our purchasing actions, we asked what other actions people were routinely doing, and whilst litter picks were the most obvious all of the others were in fact commonly practised.

Through exploring some of the challenges, barriers and limitations of an informed audience, we can help to provide feedback to the Coastal Futures audience and those working within this sector on areas of work. We will present the results of the survey, and ask the audience to engage with some of those tougher questions - do we need more knowledge, does knowledge result in action and if not why not. The session is designed to be interactive and we will share any further findings with the community after the event.

Useful links: Living without plastic

Making your business plastic free

Short Presentations: Seven x 3 min updates: Blue carbon, Science, Data & Coasts, plastics

Blue carbon - looking a gift horse in the mouth

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Increasing attention is being given to the climate mitigation potential of 'blue carbon' in coastal and shelf-sea ecosystems[1,2], at both national[3] and global scales. The importance of maintaining the integrity of carbon storage in marine soils, sediments and vegetation (preventing CO_2 release) is not in doubt, together with the many co-benefits that vegetated coastal habitats can provide. Nevertheless, key knowledge gaps[4,5] currently make it difficult, if not impossible, to reliably quantify the role of blue carbon for climate policy purposes. Major uncertainties include the sources and pathways of carbon; its rate of accumulation, burial and release; linkages with emissions of methane and other greenhouse gases; the risks of carbon release under future climate change; and the consequences of management actions, at national and international levels. Transdisciplinary research effort, from catchment to shallow seas, is urgently needed to establish scientifically-valid blue carbon accounting (monitoring, verification and valuation), e.g. as a component of Nationally Determined Contributions to the Paris climate change agreement. A new NERC strategic research programme has recently been proposed as a community-wide initiative to address these issues, with many stakeholders (including Defra) expressing interest in potential involvement.

References/links for further reading:

1. Herr D et al (2017) Pathways for implementation of blue carbon initiatives. *Aquatic Conservation: Marine & Freshwater Ecosystems*, 27 (S1), 116-129; https://onlinelibrary.wiley.com/doi/10.1002/aqc.2793

2. Herr D & Landiss E (2016) *Coastal blue carbon ecosystems. Opportunities for Nationally Determined Contributions. Policy Brief*. IUCN and TNC; https://www.nature.org/content/dam/tnc/nature/en/documents/BC_NDCs_FINAL.pdf

3. Taillardat P et al (2018) Mangrove blue carbon strategies for climate change mitigation are most effective at the national scale. *Biology Letters,* 14, 20180251; https://royalsocietypublishing.org/doi/pdf/10.1098/rsbl.2018.0251

4. Climate Analytics (2017) The dangers of blue carbon offsets: from hot air to hot water? https://climateanalytics.org/media/blue_carbon_briefing_16112017.pdf

5. Johannessen SC & Macdonald RW (2016) Geoengineering with seagrasses: is credit due where credit is given? *Environmental Research Letters* 11, 113001; http://iopscience.iop.org/article/10.1088/1748-9326/11/11/113001/meta

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Why your data matters!

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Data is often referred to as the "new oil or electricity" as its intrinsic value to an organisation is second only to that of its employees. Whilst we are very good at collecting data - business data volumes are doubling every 1.2 years and 90% of all data in existence today has been created in just the last 2 years- we are not so good at managing it!

Adequate data governance is lacking in many UK businesses, the impact of which can easily result in damage to the organisations reputation, customer loyalty and also the bottom line, with reduced revenue and increased costs affecting profit margins.

The recent CBI Report: 'Unlocking Regional Growth - Understanding The Drivers of Productivity Across the UK's regions and Nations' (March 2017) expressed concerned that the UK is falling behind on international comparisons of productivity. A lack of Data Governance is a contributory factor.

Organisations have to realise the value of their data and in doing so assume responsibility for it to ensure that it is 'cared for' in a similar manner to other company assets, such as its staff, machinery or IT.

Without data governance a state of data 'anarchy' or disorder exists. Developing a data policy and management plan is a logical first step followed by defining the data life-cycle, from its creation, use, storage, re-use to its archiving.

By failing to prioritise data management in the UK, which is troubling, this valuable resource cannot be given the respect it deserves because 'your data really does matter!'

www.oceanwise.eu

Working together to improve access to marine data

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The Marine Environmental Data and Information Network (MEDIN) is the hub for UK marine data and promotes sharing of and improved access to that data. It is an open partnership with partners representing government departments, research institutions and private companies. Marine data are expensive to collect and always unique in relation to time and geographical position. There are wide commercial, scientific and conservation benefits to be gained from working together to share and properly manage these data.

Data are accessible via a portal, which contains information about 14,400 marine datasets from over 400 UK organisations. Data are managed and delivered by a network of specialist data archive centres. These include the UK Hydrographic Office; the Met Office; the British Oceanographic Data Centre; the British Geological Survey; DASSH; Marine Scotland; CEFAS; the Archaeology Data Service; Historic Environment Scotland; and the Royal Commission on the Ancient and Historical Monuments of Wales.

MEDIN provides:

- Secure long-term management of marine data sets at specialist data centres.
- Improved access to marine data from a single website.
- An agreed set of common standards for sharing marine data, maintained and supported by partners, to enable easy discovery and re-use of data.
- Expertise on best practice data management for marine data.
- Free data management workshops around the UK.

MEDIN is funded by a consortium of sponsors and is hosted by the British Oceanographic Data Centre at the National Oceanography Centre in both Liverpool and Southampton.

POSEIDON - A Probabilistic Offshore Scour Evolution Model - reducing environmental impacts and costs for offshore windfarm development

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Atkins has developed an innovative scour erosion evolution model, POSEIDON, that provides a more accurate prediction of local scour erosion depth at offshore windfarm foundations by incorporating realistic metocean and ground conditions over the design life of the structures. More accurate prediction of scour erosion can significantly reduce over-engineering of the foundations, both in terms of foundation depth or scour protection design. Reducing the requirement for scour protection or over-engineering results in a reduction of environmental impacts through limiting habitat loss and habitat disturbance, reduces the risk of introduction and spread of invasive non-native species and also reduces installation times and requirements. Reducing scour protection requirements also significantly reduces costs for developers.

Applying the Building with Nature concept: An innovative solution to coastal management at Bacton

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Following the impact of storms in December 2013, the Bacton Terminal Operators began working with Royal HaskoningDHV to deliver a coastal protection scheme. Drawing on our previous experience, Royal HaskoningDHV designed and developed a multi-functional Sand Engine.

Our iterative design process, strengthened by a suite of multi-disciplinary inputs, was a critical tool for this unique scheme. Given the environmental complexities of the North Norfolk coastline, Environmental Impact Assessment (EIA) formed a crucial input to this process. This presentation focusses on one example implemented on the project, of utilising the EIA process to influence detailed design.

An area of subtidal chalk bed was identified in the nearshore zone in front of Bacton Gas Terminal. To understand the ecological importance of this feature, we conducted benthic surveys and workshops with local fishing groups. Sediment transport modelling was completed to help refine the scheme design, in light of our findings. The resulting solution has been selected to work with natural coastal processes, whilst avoiding adverse impacts to the chalk bed feature and the species it supports.

This is the first time in the UK that sandscaping will be used to provide a sustainable long-term solution. The design process reinforces the Building with Nature concept and is a timely example for future projects.

For further information please see the following link:
https://www.royalhaskoningdhv.com/en-gb/united-kingdom/news/uk-news/innovative-dutch-coastal-management-solution-for-the-uk/7472

Tern it up - furthering the conservation of UK's tern populations

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The UK has 5 species of breeding tern – Sandwich, Common, Little, Arctic and Roseate. Terns are amongst the UK's most vulnerable group of birds – nesting on open ground close to the high tide mark. They are highly threatened by loss of habitat through sea level rise, coastal erosion, and by disturbance through increased human activity along the coast within the few remaining areas of suitable habitat. As the UK coastline is highly managed, opportunities for these colonies to shift to other natural sites are limited. Without planning for the creation of new areas, these iconic birds will be lost from our coasts.

But critical habitat can be created for breeding terns and other vulnerable species through coastal management schemes, including beneficial use schemes. The RSPB hopes to work with other coastal stakeholders to provide new areas of suitable habitat and increase public awareness and understanding of the issues, these include special features such as bird nesting islands within their design. These can provide huge nature conservation benefits, and are also attractive features for the public. We want to work with coastal stakeholders to get the right habitats in the right places. This will maximise future opportunities and deliver a step change in our conservation of terns and their associated wildlife. Let's work together.

Marine plastics – changing the habits of global shipping

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A unique perspective on the issue of marine plastics will be presented looking at how the shipping industry can take the initiative in reducing plastic pollution – the results of a roundtable on the topic held in Singapore in December 2018. The roundtable provided insight on:

- The perceived sources of marine-based plastic pollution and how the current lack of data has resulted in an inability to identify a definitive marine-based pollution source
- Current methods that exist to effectively remove plastic from the oceans and how these can be applied to shipping operations
- How waste management at ports and on ships can be improved and better enforced
- Potential new strategies to reduce plastic pollution, such as investigating the possibility of tracing plastic waste back to individual ships, introducing culpability for illegal littering
- Encouraging behavioural changes of plastic dumping in the oceans

The presentation will reflect the opinions of the key industry experts in attendance at the roundtable, which addressed the issue in a holistic manner – taking account of both scientific expertise, while also acknowledging commercial realities. The next steps will also be briefly outlined, including how the IMarEST specifically can help to facilitate change within the shipping sector and incorporate the wealth of potential solutions discussed at the roundtable into future management initiatives and legislation.

Weblinks:
https://www.imarest.org/events/category/categories/imarest-event/marine-plastics-an-action-plan-for-shipping

https://www.imarest.org/policy-news/technical-leadership

Round 4 Offshore Wind Leasing: A Balanced Approach

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As managers of the seabed around England, Wales and Northern Ireland, The Crown Estate is working with the offshore wind sector and stakeholders to consider making new seabed rights available for offshore wind. This is in light of strong market appetite for additional offshore wind capacity in the UK, which remains the largest offshore wind market in the world.

Our last major offshore wind leasing round was Round 3, nearly 10 years ago. Successful delivery of any new leasing round requires careful consideration of a busy seabed that already supports a wide range of other seabed users, as well as social and environmental factors. We are therefore engaging closely with industry and stakeholders, to share our analysis and our proposed tender process, and seek views on our approach. Following the conclusion of our design and engagement process, we intend to confirm plans for a new offshore wind leasing round, to be known as Round 4. This could be launched in the spring of 2019, with the aim of maintaining a sufficient pipeline of projects through to the late 2020s and beyond.

This presentation will outline the context for new offshore wind leasing in the UK, our proposed tender process and timescales, and the analysis and engagement we have undertaken so far to identify which regions should be available for new leasing.

Website: Materials from the engagement events and links to supporting materials are available here: https://www.thecrownestate.co.uk/potentialnewleasing

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Resolving current environment issues with offshore wind

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Uncertainties about the effects of marine renewable energy developments cause substantial delays during the consenting process, which are exacerbated by the lack of understanding about these effects. Even after over 15 years of offshore wind power development experience in the UK, potential impacts on ornithology and marine mammals remain a key consenting risk for new developments. This is largely due to uncertainty regarding the scale and significance of potential impacts and the application of the precautionary principle from regulators and statutory advisors.

At Coastal Futures 2018 Jess Campbell from the Crown Estate spoke about some of the" big" unanswered questions surrounding ornithological impacts and the need for a collaborative approach to research and monitoring. A year on and significant progress has been made on some of these key questions, however, there is still a need to identify and prioritise research and monitoring needs in relation to consenting risk for offshore wind power. Undertaking strategic monitoring through licence conditions is complex within our current legal framework and as such undertaking such broader scale research is difficult at a project level.

This presentation further explores the current initiatives underway by Ørsted and across the industry to ensure research and monitoring initiatives have a more strategic focus and can answer some of those" big" unanswered questions.

- Potential impacts on ornithological and marine mammal receptors still remain a key concern for offshore wind power
- Significant progress has been made on collaborative approach to research and monitoring but is limited by our current legal framework

- How can the industry ensure research and monitoring initiatives have a more strategic focus and can answer some of the "big" unanswered questions.

Environment Net Gain

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The presentation will consider and explore options for the application of the concept of Environment Net Gain to marine and coastal environments

Background

The 25 Year Environment Plan (see note 1) committed to embedding Environment Net Gain (ENG) for development 'to deliver environmental improvements locally and nationally'. It further specified that '*in future, we want to expand the net gain approaches used for biodiversity to include wider natural capital benefits, such as flood protection, recreation and improved water and air quality. Those approaches will sit alongside existing regulations that protect our most threatened or valuable habitats and species*'. Marine commitments were also included in the 25 Year Plan, though these did not mention 'net gain', instead pledging to '*reverse the loss of marine biodiversity and, where practicable, restoring it*'.

In December 2018 (see note 2), Defra launched a consultation on embedding an ENG approach in the planning system in England, including on whether or not (and how) ENG should be made a mandatory. While the consultation focuses specifically on the terrestrial planning system, in relation to marine it was noted that '*While marine planning and licensing policy and nationally significant infrastructure projects are not in scope of this consultation, we are considering how to best support and mainstream the net gain approaches that many infrastructure and marine projects are already taking. For marine planning and licensing, we will evaluate the actions that projects are already taking to address their environmental impacts and consider how best to implement net gain in the marine context*'.

UK marine biodiversity (both habitats and species) continues to experience some notable declines. This represents a serious failure of existing marine conservation policy and practice.

The 2011 Natural Environment White Paper (see note 3) aspired for '*this to be the first generation to leave the natural environment of England in a better state than it inherited*'. However, existing legislative and policy drivers (see note 4) have proven too weak to stem the tide of marine biodiversity decline, let alone reverse it.

Concepts such as ENG present a potential opportunity to make a real difference.

A wider and clearer ENG duty on marine decision-makers could help to ensure that all residual environmental impacts both from development projects and wider marine activities were offset to deliver marine ENG.

The presentation will outline possible options for achieving this in the marine environment.

Note 1: https://www.gov.uk/government/publications/25-year-environment-plan
Note 2: https://consult.defra.gov.uk/land-use/net-gain/
Note 3: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/228842/8082.pdf
Note 4: Most notably: compensatory measures under the Wild Birds & Habitats Directives and measure of equivalent ecological benefit under the Marine & Coastal Access Act for damage to MPA features; measures to

address impacts to priority habitats and species under s41 of Natural Environment and Rural Communities Act 2006 as part of the post-2010 biodiversity framework

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Restoring our Estuarine and Coastal Environment

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Our estuarine and coastal environment has declined substantially from its natural state and, although existing measures help in many ways, the reality is that our current efforts all too often do little more than maintain a degraded status quo.

Let's take one example: saltmarsh. Since 1860, we have gone from having over 200 000 ha of saltmarsh to having only around 34 000 ha today. That's an 83% loss. And losses continue at an average rate of 3% each year nationwide. In some areas it's even worse: 34 water bodies have lost more than 99% of their saltmarsh habitat. And those areas which have, at some point, experienced 100% loss have not recovered in any way. Even where pressures are abated, the natural environment is unable to recover without further active intervention.

And saltmarsh is not the only habitat at stake. Similar facts can be recited around habitats like seagrass meadows and biogenic reef such as native oysters.

With every loss there is a consequent loss in the ecosystem services these habitats provide: flood resilience, carbon and nutrient sequestration, biodiversity and fish nurseries amongst them. This presents a significant cost to all of us - even if that cost is not often acknowledged and is one of which we are mostly unaware. It also represents missed opportunities for businesses to mitigate their impacts, for productivity of our seas to be enhanced and for people to improve their employment prospects and wellbeing, especially in coastal communities.

The 25 year environment plan provides an opportunity to change direction. It sets an ambition to restore marine biodiversity where practicable and to deliver environmental net gain.

In the Environment Agency we have significant experience at creating and restoring areas of saltmarsh and we know many others in the UK and further afield have created and restored other habitats too. Together we have the expertise to realise the plan's ambition but we need to work together to achieve this.

In this presentation we will share results from our analysis of historic estuarine and coastal habitat loss and look at the risk of future loss. We will then share details of our developing initiative for estuarine and coastal habitat restoration and invite you to collaborate with us and to join us in the cause of restoring our seas.

Find our general page here:
https://www.gov.uk/government/organisations/environment-agency

Our advice for assessing the impact of your activity in estuaries and coastal waters here:
https://www.gov.uk/guidance/water-framework-directive-assessment-estuarine-and-coastal-waters

Communicating environmental issues to make a difference

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Many environmental advocates are trained as scientists or expert in other disciplines. This equips them to play a part in specialist policy discussions where proposals are expected to be based on analysis, facts, figures etc. Such reasoning is often regarded as a 'superior' way to 'make decisions'. Yet when exported into the public domain it often produces suboptimal results.

Research into how people think and make decisions shows that because this conscious 'analytical' or 'rational' mode is hard work, the vast majority of decision-making, including the processing of 'messages' presented on the *assumption* that they will be assessed analytically, is instead made through intuitive unconscious reasoning [known as System 1, as opposed to the analytical conscious System 2].

Our brains usually offer instant decisions/ opinions based on System 1 and use 'substitution' of System 1 for System 2 whenever we are faced with something hard to decide.

Personal and political or business decisions requiring public support are mostly on System 1. The mainstream public world is in effect on a different track – Track 1 – from the technical, expert, scientific world where System 2 dominates (Track 2), or at least is supposed to.

So what works for communication 'in science' (or economics, law etc) will not work in everyday life.

Ideas and proposals derived from Track 2 need to be communicated in Track 1 terms if they are to be adopted by 'normal people'.

Communications tools which help you structure communications so that behaviour or perception objectives can be achieved on Track 1, include heuristics, motivational values and framing. These are routinely used in sales, marketing and advertising but often ignored by scientists and other professionals.

Sources:

George Lakoff (2014) Don't Think of An Elephant, pub Chelsea Green
Robert Ciladini (2007) influence: The Psychology of Persuasion, pub Harper Business
Daniel Kahneman (2012) Thinking Fast and Slow, pub Penguin
Chris Rose (2010) How to Win Campaigns: Communications for Change, pub Routledge
Chris Rose (2011) What Makes People Tick: The Three Hidden Worlds of Settlers, Prospectors and Pioneers pub Troubador [available from author]
www.campaignstrategy.org

www.cultdyn.co.uk

Protecting the ocean's final frontiers – the high seas & deep ocean

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Most people don't think much about the high seas. Far beyond the horizon, they begin where national control ends, 200 nautical miles from the coast, cover 61% of the ocean, and 43% of the Earth's surface. Few laws restrain fishing here, countries can opt out of those that exist, and much activity is in

any case hidden by remoteness. As a consequence, life on the high seas has experienced steep declines in recent decades, pushing some species into endangerment and a few to the edge of extinction. In addition, commercial mining of the deep ocean seabed is on the brink of commercial viability and is expected to commence within a few years. The inadequacy of high seas management to safeguard wildlife and target species has been known for a long time. After years of preliminary meetings, in 2018 the United Nations convened a conference to negotiate an international legally binding instrument for the protection of marine life beyond national jurisdiction. There will be three more meetings in 2019 and 2020 to agree terms for this instrument, which is intended to allow nations to meet their obligations to protect the high seas environment under the UN Convention on the Law of the Sea. This presentation will explore our rapidly increasing understanding of life on the high seas, the threats that face it and options for management.

https://www.frontiersin.org/articles/10.3389/fmars.2017.00268/full

https://www.sciencedirect.com/science/article/pii/S2351989418301021

Day 2 – Thursday 24th January

Meeting our international commitments to protect & manage the ocean's resources: the opportunity of the Commonwealth Blue Charter

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- The Commonwealth Blue Charter was adopted at the Commonwealth Heads of Government Meeting (CHOGM) in London, 20 April 2018.
- All 53 Commonwealth countries have agreed to cooperate towards attainment of the myriad of ocean-related commitments that they face, with particular focus on the UN Sustainable Development Goals, especially SDG 14 (Life Below Water).
- To date, twelve countries have stepped forward to be 'Blue Charter Champions' and lead on nine different topic areas relevant to sustainable ocean development and conservation (see table). More are expected.
- The nine 'Blue Charter Action Groups' are currently soliciting members. Both governments and non-governmental entities may become members.
- The UK is with Vanuatu co-leading the Commonwealth Clean Oceans Alliance, which is the Blue Charter Action Group addressing marine plastics pollution. At the time of writing, it had secured the participation of 21 member governments, with more expected.

	Action Group	Champions
1.	Aquaculture	Cyprus
2.	Blue economy	Kenya
3.	Coral reef restoration	Australia, Belize, Mauritius
4.	Mangrove restoration	Sri Lanka
5.	Marine plastics (Commonwealth Clean Oceans Alliance)	UK, Vanuatu
6.	Marine protected areas	Seychelles
7.	Ocean acidification	New Zealand
8.	Ocean and climate change	Fiji
9.	Ocean observations	Canada

Web link: www.commonwealthbluecharter.org

Community, conservation and sustainable fisheries in UNESCO Biosphere Isle of Man

Fiona Gell[1], Peter Duncan[2] and Karen McHarg[2]

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[2] Dr Peter Duncan – Senior Marine Environment Officer and Mrs Karen McHarg – Director of Fisheries
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The Isle of Man is the only entire nation to be a UNESCO Biosphere Reserve and is part of a network of 686 such reserves worldwide. UNESCO describes Biosphere Reserves as 'learning sites, integrating people and nature for sustainable development'.

The Isle of Man has a unique marine environment, and in recent years our understanding of key species and habitats, including basking sharks, Risso's dolphins, horse mussel reefs and eelgrass beds, has increased as a result of citizen science collaborations with research organisations, government research and partnerships with universities.

Building the Isle of Man's network of Marine Nature Reserves began in 1989 when the Port Erin Closed Area was established, initially for fisheries research. Further fisheries closed areas were established and the Manx Marine Nature Reserve project began in 2008, aiming to engage and involve the whole community in identifying important marine sites and designing marine reserves that could benefit fisheries and biodiversity. Investing time in a patient, *traa dy liooar* ('time enough') approach; giving people the information they needed, listening to their views and having the flexibility to respond to developments along the way, has resulted in a well-respected network of sites which has good support from the fishing industry, conservationists and other stakeholders.

Ramsey Marine Nature Reserve was established in 2011 and protects horse mussel reefs, maerl beds, eelgrass meadows and other habitats from trawling and dredging, with additional protection from potting and other fishing in some zones. Ramsey Marine Nature Reserve also features a Fisheries Management Zone where fisheries co-management, led by the Manx Fish Producers' Organisation (MFPO), effectively manages king scallop stocks, permitting a strictly managed fishery once a year. Fishermen collect the scientific data and the MFPO analyses the data and proposes a sustainable fisheries management plan for the area. Scientists from Bangor University, which is the fisheries advisor to the Isle of Man Government, work alongside the MFPO and have demonstrated that this directed king scallop fishery has minimal impact on the seabed and can provide a highly efficient, and unusually low-carbon harvest, in terms of fuel usage.

In 2018, four new Marine Nature Reserves were designated, and other fisheries closed areas were given additional protection, creating a network of 10 Marine Nature Reserves. These sites form the core marine zones of UNESCO Biosphere Isle of Man and now protect 52% of inshore waters from trawling, dredging and other impacts.

As a small but vibrant island community with a long maritime history and strong links to commercial and recreational uses of the sea, the Isle of Man has a wealth of community marine conservation in action. The charity Beach Buddies mobilises over 10,000 people (of a population of 86,000) to clean beaches and other public places all year round, resulting in visibly cleaner beaches and a reduction in macro-plastics locally. Public sightings schemes for basking sharks and cetaceans have made important contributions to our understanding of these species, and local divers contribute data to Seasearch and have discovered new eelgrass meadows and horse mussel reefs that have now been protected within the new Marine Nature Reserves. Government, fishing industry, environmental organisations and the wider public work in close partnership to make things happen. A real paradigm shift has occurred over the last 30 years, from concern and suspicion from the fishing industry about

the threat of Marine Protected Areas and fisheries management measures to a real partnership approach that is benefiting fishermen, other marine users and nature.

Going forward, additional zoning to protect key features will be developed in partnership with stakeholders. Priorities for protecting key habitats and species outside 3 nautical miles will also be considered. A recent blue carbon audit has highlighted the current status of carbon stored in Manx marine habitats and demonstrates what may be possible for future marine management and climate change mitigation. We are also working on more innovative ways to engage the wider community in marine management, for example using new approaches like Fun Palaces to engage more widely, the development of stakeholder-inclusive management plans for all the Marine Nature Reserves and working with the Manx community to develop a common vision for UNESCO Biosphere Isle of Man and for a sustainable future.

Links:

Department of Environment, Food and Agriculture: www.gov.im/about-the-government/departments/environment-food-and-agriculture/

Fisheries Strategy: www.gov.im/about-the-government/departments/environment-food-and-agriculture/fisheries-directorate/future-fisheries-strategy/

Biodiversity Strategy www.gov.im/about-the-government/departments/environment-food-and-agriculture/ecosystem-policy-and-energy/wildlife-biodiversity-and-protected-sites/biodiversity-strategy-and-delivery-plan/

UNESCO Biosphere Isle of Man: www.biosphere.im

Manx Fish Producers' Organisation: www.manxbiodiversity.org/MFPO.html

Bangor University IOM fisheries science:
http://fisheries-conservation.bangor.ac.uk/iom/index.php.en

Beach Buddies: www.beachbuddies.net

Manx Wildlife Trust: www.manxwt.org.uk/manx-wildlife/manx-marine

Manx Basking Shark Watch: www.manxbaskingsharkwatch.org/

Manx Whale and Dolphin Watch: www.mwdw.net

Seasearch Isle of Man: http://www.manxbiodiversity.org/Seasearch.html

Articles:

www.theguardian.com/world/2018/oct/23/a-sea-change-how-one-small-island-showed-us-how-to-save-our-oceans

https://www.theguardian.com/commentisfree/2018/mar/09/blue-planet-hope-mass-die-off-starfish-marine-conservation-success

www.theguardian.com/commentisfree/2018/feb/02/driving-future-conservation-ordinary-people-citizen-scientists-bbc-winterwatch

www.theguardian.com/commentisfree/2017/dec/03/britain-coral-reefs-marine-wildlife-blue-planet-2-protection

Marine Planning in England – Progress and future direction

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In 2018 good progress has been made towards the iterative development of the South East, South West, North West and North East marine plans for England. Following on from stakeholder feedback on draft vision and draft options during spring engagement and outputs from the sustainability appraisal, preferred policy options were identified for each marine plan area. Over the summer months the Marine Management Organisation has been engaging with stakeholders and refining draft plan policies, these will form the focus of public workshops in January and February 2019.

Alongside development of plans, 2018 saw the adoption South Inshore and Offshore Marine Plan and the continuation of implementation training sessions with local planning authorities, marine decision makers and port and harbour authorities across the plan area.

The Marine Management Organisation continues to advance its marine planning work with a number of development projects in progress including: exploring potential opportunities presented by further use of digital approaches; mapping of decision maker processes and improving understanding of how to engage hard to reach stakeholders.

The presentation by Clare Kavanagh, Senior Marine Planner at the Marine Management Organisation, will outline the programme of work underway related to marine planning in England, setting out challenges, learning and future direction of this evolving field.

Web-links and/or references
Marine planning in England: https://www.gov.uk/government/collections/marine-planning-in-england
Marine Management Organisation:
https://www.gov.uk/government/organisations/marinemanagement-organisation
England's marine plan areas: https://www.gov.uk/government/publications/marine-plan-areas-inengland
Marine Information System: http://mis.marinemanagement.org.uk

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Marine Planning in Scotland: Update

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The Marine Planning Update from Scotland will cover the 2018 statutory review of Scotland's National Marine Plan and resultant work programme to support the further integration of marine planning in Scottish Waters. There will be a progress update on the roll-out of Regional Marine Planning and Partnerships around Scotland, notably in the Clyde and Shetland Regions. The update will also cover the forthcoming consultation on a new Sectoral Marine Plan for Offshore Wind Energy for Scotland, which will provide the spatial footprint to support the new commercial leasing round for offshore wind energy announced by Crown Estate Scotland.

www.gov.scot/marine

Wiser decision-making for our seas

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Marine managers and researchers place a high value and trust in scientific and economic evidence as being crucial to wise decision-making. But investment in gathering evidence for use in decision-making is not matched by investment in the decision-making itself.

The prevailing view of evidence based decision-making is that it results from this: gather the best available data and evidence, rationally analyse it, and the decisions become clear (rational choice theory). With this view, if you want better decisions, it's logical to:

- Invest in more marine data and information
- Gather stakeholder views (as another form of data)
- Ensure that science-trained experts, who know how to rationally analyse, make the decisions

But what if this is all based on incorrect assumptions about how decisions are made and what determines the outcome?

Getting it wrong would be like investing millions in gathering data and then using a ten quid calculator to process it. We need to understand and invest in what processes the evidence, decides what matters, and plans what to do, and in the end it is human brains and human decision processes. If these are flawed and inadequate for the task, it doesn't matter how great your data or information is.

Of course the extent to which it is worth investing in decision-making itself, varies with different types of marine decisions. There are straightforward situations when 'normal' applied science does the job. But when there is a lot of uncertainty and wide variety of stakeholder views, greater investment in the decision-making process is needed ('post normal science'). However brilliant they are, researchers and managers can't go it alone because other forms of knowledge and knowhow are needed too.

Regardless of the level of uncertainty and decision stakes in play, we need to be better at understanding and factoring in how humans actually make decisions. That starts with recognising that none of us are rational optimisers. In fact, we have all sorts of mental glitches that can make fools of us! The rest of this talk will introduce some of the things that do influence decision-making and how you make your mind up:

Heuristics (mental glitches): These are mental short cuts or rules of thumbs we unconsciously use to ease the cognitive load of making a decision. They can help us make the right choices but in the context of complexity they are not up to the job. Here are a few examples to give the idea:

- Anchoring: we rely most heavily on the first information we hear
- Availability/ease: if we can easily bring something to mind we think it is more common
- Familiarity: we are disproportionally influenced by aspects of a situation that resonate with what you already know or have experienced before
- Confirmation bias: we favour information that fits our existing way of seeing things
- Sunk costs: we invest more if we have already invested a lot - even if new evidence shows the cost of continuing outweighs the benefits
- Stereotyping/prototyping: we make assumptions made on mental images and patterns
- Functional fixedness: we presume things only work in the way we are familiar with
- Optimism bias: we think we are less likely to suffer misfortune and more likely to achieve success than others
- Your mood: when we are in a good mood we see higher benefits and lower risks
- Subconscious and changing selection criteria: what you choose may depend on which part of your brain has the upper hand at the point of choosing
- Decision fatigue: the more decisions we have made in a day the more erratic our decisions
- Social cues: our decisions are strongly influenced by others and what choices they make via social norming (go with the crowd – herd behaviour), copying someone you trust, following the leader, on principal agreeing with or resisting the power holder, presuming a false consensus (overestimating how much people agree with us)

Psychological barriers: most environmental decisions affect multiple other interests and without good dialogue process, will trigger a range of psychological barriers including:

- Short termism and localism
- Desire for autonomy and control
- Pursuit of happiness
- Reputational or 'face' needs
- Social loafing
- Polarization

Positional Behaviour: our culture in the west is to use adversarial negotiation tactics by default, but these have significant disadvantages in complex situations. Shifting to principled negotiation behaviour pays dividends but can usually only be achieved in small groups or with a third party process designer/facilitator.

Constructive Dialogue: our culture is also wedded to the idea of problem solving, but when humans focus on problems we demotivate ourselves and trigger self-defeating behaviours. If we focus on what's working and how to strengthen and add to that, we enhance our ability to find solutions and to have the momentum to implement them.

Power, perspective and behaviour: in most meetings the decision outcomes result from how these three things play out in the group - we might think a decision is made on merit, but if the decision process is not carefully designed, structured and facilitated, social dynamics get in the way.

Understanding all this makes it possible to factor into decision-making processes and:

- Embed an ethos of making decisions with, not for, others so everyone feels respected and their contribution is valued
- Share different types of knowledge and evidence including, but not only, science and economics
- Design and facilitate processes and events to encourage open minded thinking, principled negotiation, and constructive dialogue
- Factor in times to think laterally and creatively
- Deliberate over options so they are well thought through from all relevant perspectives including knock-on and long term effects
- Ensure decision points use techniques that mitigate mental glitches and social norming - so that solutions are agreed on their merit

For smaller more straightforward topics, having the right ethos and using De Bono Six Hats methods to structure meetings and decision-making processes will make a big difference. For more complex multi stakeholder, multi issue dialogue, you need to have the skills of neutral process design and facilitation, or involve someone who has.

In conclusion, we need to continue to invest in good science and evidence but we also need to invest in understanding what is really happening in decision-making and use methods that result in wiser decisions for better managed seas!

www.dialoguematters.co.uk

Inshore Fisheries and Conservation Authorities (IFCAs) update

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Inshore Fisheries and Conservation Authorities (IFCAs) were created in 2011, by virtue of the Marine and Coastal Access Act, 2009. The Act provides the legal mechanism to help ensure clean, healthy, safe, productive and biologically diverse oceans and seas by putting in place a new system for improved management and protection of the marine and coastal environment.

Since 2011, IFCAs have been reforming inshore fisheries management in pursuit of their vision to 'lead, champion and manage a sustainable marine environment and inshore fisheries, by successfully securing the right balance between social, environmental and economic benefits to ensure healthy seas, sustainable fisheries and a viable industry'.

The role of the IFCAs is unique in the UK in terms of their remit which brings together both fisheries management and marine conservation within small, very lean organisations with direct local accountability to the communities they serve. Their work integrates the requirements of both the public and private sectors and seeks to find common ground between a range of stakeholders and the wider public.

The work of IFCAs in managing inshore fisheries is important with respect to its socioeconomic impact. In both rural and urban coastal communities, fishing brings employment and economic activity, often where there are limited alternatives. Inshore fishing is the most important sector of the English fishing fleet, in terms of number of vessels and direct employment. The 'under-10m' sector represents over 76% of the English fishing fleet by number and provides 65% of the direct employment in fishing.

Current domestic legislation and international commitments outline broader long-term responsibilities for the UK government to protect the marine environment and the ecosystems it supports. IFCAs are at the forefront of delivering this portfolio of work by breaking down barriers between marine conservation and fisheries management. These wider policy commitments include adopting an Ecosystem Approach to marine management. In the context of fisheries management, such an approach should acknowledge that fisheries form part of this wider, changing marine environment, and that integrating and aligning fisheries management with wider objectives, such as marine conservation, is essential. The Government's 25 Year Environment Plan states this approach will 'account for and seek to minimise impacts on non-commercial species and the marine environment generally'. The IFCAs have been innovative in this regard, particularly through the creation and delivery of management for the Marine Protected Area network within English inshore waters.

Short Presentations: Six x 3 min updates: Engagement, marine planning & science

Shaping the Future, Conserving the Past of a Post-Industrial Seascape: 'SeaScapes' A Case Study of the UK's First Seascape-scale Conservation Initiative

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SeaScapes focuses on the Magnesian Limestone coast between the Rivers Tyne and Tees in North-East England. There is much to be celebrated from rich maritime heritage to an internationally important seabird colony. Once covered in colliery spoil, major regeneration has also seen this seascape reinvigorated into life. Much of this heritage is out of sight, held only in memory, beneath the waves just waiting to be discovered.

Supported by the Heritage Lottery Fund and Partners, SeaScapes will deliver thirty interconnected projects to conserve the natural environment and rich maritime heritage. Working collaboratively across multi-disciplines will ensure the natural, cultural and historical heritage of the seascape is as a whole: to improve biological recordings through citizen science; tackle marine litter; create opportunities for local people and visitors to engage with their heritage and enjoy being on and in the sea.

Currently in the development phase, the scheme is hoping to unlock £5million to better understand and manage the seascape, instigate a culture of marine citizenship and inspire behavioural change. It is intended that the 4 year delivery phase will commence in 2020.

Weblink: www.exploreseascapes.co.uk

Enhancing knowledge exchange and encouraging collaboration between researchers and marine management institutions

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Marine and coastal management issues are often incredibly challenging, being by their very nature highly complex and multifaceted. The issues are almost always multi-disciplinary and require a very broad range of expertise to resolve effectively. Thus, marine and coastal management institutions often need input from external researchers. Indeed, effective collaboration between external researchers and management institutions could contribute greatly to marine and coastal management, and facilitate the incorporation of the most cutting-edge science into policy development and delivery. However, collaboration is not straightforward. Management institutions and researchers may have very different incentives for collaborating and there are a range of barriers, both individual and institutional, that make collaborating difficult. This project explores the reasons why researchers choose to engage, or not, with government institutions involved in marine and coastal management. Here we will present finding on what the main incentives that currently drive engagement efforts, the barriers that prevent it, and possible ways to facilitate enhanced interactions in the future. We show that collaboration requires investment over extended timeframes and is hindered by both individual and institutional barriers that often overwhelm incentives. Our next steps are 1) explore how barriers and incentives effect individuals differently and 2) to look for solutions.

This is a collaborative project between myself, Dr Katherine Yates, and Dr Jacqueline Tweddle of the University of Aberdeen, who is also a NERC Knowledge Exchange Fellow with the MMO.

Web links:
www.salford.ac.uk/environment-life-sciences/els-academics/katherine-yates
www.abdn.ac.uk/sbs/people/profiles/jftweddle

Agents of Change: Making Marine Conservation Zones matter

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Marine Conservation Zones (MCZs) have numerous recorded benefits, however for many coastal communities around England, MCZs are not supported or considered assets. Locals are either unaware of their MCZ or consider it a top-down imposition. This is damaging to the aims of MCZs as many benefits can only be realised if communities appreciate and embrace their local MCZ.

Agents of Change is supporting positive narratives to help coastal communities realise the value of their local MCZ. This on-going pilot project nurturing local stewardship and enabling local messengers to help many of the recorded MCZ benefits to be understood and safeguarded within communities. In three locations:

1) Kingmere MCZ, West Sussex, designated and has fisheries management. Locals wanted relevant MCZ engagement tools, leading to community-focused website and signage showcasing local values, plus wider community engagement.
2) Cromer Shoal Chalk Beds MCZ, Norfolk, designated and has no specific fisheries management. Community workshops identified the need for better engagement with managers, for support towards the future of the local fishing fleet and accessible MCZ education tools.
3) Beachy Head East recommended MCZ is currently undesignated. Businesses and groups wanted a community-focused campaign, using electronic and non-electronic methods. All messaging is based on substantial local values research.

www.kingmeremcz.uk (release due early 2019)

www.beachyheadeast.org

www.marinecolab.org

www.mcsuk.org

Societal engagement and conflict resolution in marine planning – outputs of a Winston Churchill Memorial Trust Fellowship to North America

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The aim of my 2018 Winston Churchill Fellowship was to examine processes for engaging people in maritime planning activities. The case studies I visited used a range of tools to ensure success.

- **Goals**
  Where the disciplines of social and biological science work together to set goals, we gain immeasurably by better understanding the role of people, how they take decisions and the impact on biological systems.

- **Constituency**
  Who is making the decisions? Who is informing those decisions? Who is impacted and who is ultimately enforcing them?

- **Decision Support Tools**
  Access to information and associated decision-support tools provides a baseline to work from and therefore a starting point for negotiated solutions.

- **Commitment**
  Stakeholders made a defined public and organisational commitment to the process.

- **Conflict Resolution**
  American's willingness to discuss and address conflict has led to the development of the 'Environmental Collaboration and Conflict Resolution' process in most environmental conflicts in the US.

- **Recruit, Retain and Reactivate**
  Working with social scientists and borrowing from the world of marketing, such as the use of the '3R's', keeps projects on message throughout.

- **Neutral Facilitation**
  Independent professional facilitators ensure there is a functional and useful process which moves the debate forward.

Hindsight and Long-term Surveillance in Milford Haven Waterway (MHW)

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The MHW oil industry has been operating since the 1960s. As a result of initiatives by the Field Studies Council from 1978 to 1993, and since then by the Milford Haven Waterway Environmental Surveillance Group (MHWESG), surveys have determined concentrations of sediment contaminants for 40 years. During this time, however, changing laboratory methods make it difficult to compare current sediment contaminant concentrations with those recorded in the past.

Long-term surveillance programmes must ensure comparability of results over decades. Evolving laboratory methods must be considered at the development stage and throughout the duration of surveillance. Before a newly accredited or revised analytical method is adopted, it is essential that an inter-calibration exercise is carried out. This was not consistently undertaken when sediment contaminant surveys in MHW were commissioned using changed methods.

To address this, MHWESG recently undertook an inter-calibration exercise of past and present methods. The converted data create a reliable baseline for future monitoring, impact assessments of spills and of engineering interventions. Additionally, a timeline was created for total hydrocarbons (THC) and a suite of trace metals contaminants.

The full value of long-term surveillance can only be realised when data is archived properly, including ancillary information on context, constraints, and field and laboratory methods. Commissioning bodies need to ensure that sufficient documentation is irrevocably embedded with the results. Otherwise, constraints and specific methods employed will be forgotten and data misused long after the original purpose of the project has been served. Awareness of field and laboratory methods is particularly important when datasets are used to develop baselines, trends or undertake Environmental Impact Assessment predictions.

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MHWESG reference:
Little DI (2017) Sediment Contaminant Concentrations in Milford Haven Waterway: Data Conversion and Timeline. Report to Milford Haven Waterway Environmental Surveillance Group, pp 125 including 8 Appendices http://dx.doi.org/10.13140/RG.2.2.22272.07680

Purpose of MHWESG:
To provide high quality environmental information to enable members of the Group, and other authorities and industry working in and adjacent to the Waterway, to contribute to the maintenance and enhancement of the rich and diverse marine environment of the Waterway.

MHWESG members:
Dragon LNG Ltd, Natural Resources Wales, Pembrokeshire Coast National Park Authority, Pembrokeshire County Council, Port of Milford Haven, RWE Generation UK Plc, South Hook LNG Terminal Company Ltd, Puma Energy Ltd, Valero Pembrokeshire Oil Terminal Ltd, Valero Energy Ltd.

Data, models and ecosystem services: the Marine Ecosystems Research Programme

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The effects of marine ecosystem changes on ecosystem services are difficult to predict because of our limited understanding of marine food-webs, how they respond to changes in pressures, and how those changes then influence services. Biogeochemical ecosystem models do a good job of representing change in groups of organisms primarily influenced by spatio-temporal dynamics in physics and chemistry, such as phytoplankton and small zooplankton. For groups of organisms higher in the food-web, such as fish, mammals and birds, a variety of different modelling approaches are used. No particular approach attempts to model the entire system, each viewing the food-web from a different perspective. Links to services are rarely explicit. To allow us to respond appropriately to change we need to improve our understanding of, and ability to model, the marine ecosystem as a whole, and links between changes in the marine ecosystem and its ability to deliver services. Co-funded by Defra and the NERC, the Marine Ecosystems Research Programme (www.marine-ecosystems.org.uk) developed mechanisms to bring together existing data, targeted new data, different models, and to link them to ecosystem services. A key aim was to project effects of possible policy decisions on ecosystem services which are mediated by ecosystem processes. The programme is coming to an end and an interactive website linking general policy questions to MERP research is available.

Web link: www.marine-ecosystems.org.uk

The Fisheries Bill – A UK Seafood Industry Perspective

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The primary purpose of the Fisheries Bill is to provide the UK Government with the powers it will need as a sovereign coastal state to manage access and resources within its Exclusive Economic Zone after exit from the EU's Common Fisheries Policy.

Although this may alter who fishes where and for what stocks, it does not cover the UK's future trading relationships, with the EU or others, which are critical to the balance of supply and demand on the UK market. Around two thirds of what we eat is imported, mainly from outside the EU, while most of what we catch is exported, mainly to the EU.

This is largely a function of consumer choice. The most popular species are not available in sufficient quantities in UK or EU waters, or with the necessary continuity of supply. "Taking back control" of UK waters will not of itself change this, though it could result in increased supply from UK vessels over time.

Existing processing capacity reflects current trade flows. Increasing domestic production would require new investment in plant and labour. It is also vital that any new UK fisheries management regime commands full consumer confidence and has sustainability at its core.

Brexit & the Fisheries Bill: an environmental perspective

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In October 2018 Michael Gove announced the publication of the Fisheries Bill to take back control of UK waters and that would create powers to build a sustainable, profitable UK fishing industry and deliver a Green Brexit with new protections for our precious marine environment.

https://www.gov.uk/government/news/gove-launches-fisheries-bill-to-take-back-control-of-uk-waters

Greener UK - a coalition of 13 major environmental organisations leading the voice of the environment sector on Brexit related matters – welcomed the Bill but expressed concern that there were some critical weaknesses and omissions including: the absence of a duty on all relevant public authorities to achieve the fisheries objectives; a duty to set catch limits at or below maximum sustainable yield; a failure to review the way quota is allocated; and a failure to introduce a commitment to verifiable full documentation of catches and effective monitoring and enforcement.

https://greeneruk.org/briefings/agriculture-fisheries

As the Bill has been introduced to Parliament Greener UK have provided both written and oral evidence to the Bill committee and the Environment, Fisheries and Rural Affairs committee who have scrutinised the Bill.

https://greeneruk.org/sites/default/files/download/2018-12/Fisheries_bill_Greener_UK_evidence_to_EFRA_committee.pdf

At the time of conference the Bill has gone through first and second readings in the House of Commons and is still to undergo report and third reading before moving to the House of Lords for scrutiny and debate.

The UK government's white paper stated the intention to deliver world leading fisheries. If we are to do this we believe it is vital that the key omissions identified by Greener UK are addressed effectively. This presentation will focus on some of the key priorities that we believe need to be addressed if we are to secure a management system for fisheries that will deliver sustainable, productive fisheries and a healthy, biologically diverse marine environment, benefitting our oceans and the coastal communities dependent on them for a sustainable livelihood.

The Fisheries Bill will be a key element in delivering sustainable UK fisheries management and will need to be underpinned by effective resourcing as well as inclusive, transparent and robust governance across the UK, including a strong environmental watchdog or watchdogs. In England it has been promised that the Environment Bill will deliver governance through the creation of an Office for Environmental Protection but significant uncertainty remains on future governance arrangements in Northern Ireland, Wales and Scotland.

Seeking Sustainable Scallops: Is Spatial Management the Answer?

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1. The UK scallop fishery is highly lucrative but highly exploited:
The fishery for great scallops (*Pecten maximus*) is now the most valuable of all fisheries in England and the 3rd most valuable in the UK overall. This is due to an almost exponential rise in both effort and landings in scallop fishery over the past two decades. As a result, populations of scallops are highly exploited in most areas around the UK, with the available evidence suggesting the fishery peaked around 2012 and that catch per unit effort is now declining. Densities of scallops on commercially exploited scallop grounds around the UK are generally less than 5 /100m^2, and sometimes as low as 1 /100 m^2 at the end of a season. However, surveys in the few areas protected from scallop fishing demonstrate that the grounds can support densities at least an order of magnitude higher (i.e. over 50/m^2). Such densities are also common in the scallop fisheries of other countries that use more proactive management than the UK (e.g. France, USA and Canada). Management of the UK scallop fishery is based almost entirely on technical measures at present, with little to no restriction on numbers of vessels or total catches. Attempts at effort control in the Western Waters have had little effect due to international swaps. The low (potentially falling) density of scallops on most UK fishing grounds indicates this light touch approach to management has produced an inefficient fishery.

2. Dredging effects cause conflict with conservation & other fisheries:
The UK dredge fishery for scallops is also one of the most controversial and potentially damaging to marine ecosystems. This damage is most acute in sensitive biogenic habitats such as maerl, seagrass and mussel beds, but only some areas of these habitats are currently protected, and even in those areas illegal fishing sometimes occurs. At the other end of the spectrum, dredging appears to have limited effects in mobile sediments subject to high levels natural disturbance. The problem is that most scallop dredging occurs in sandy / gravelly habitats that lie somewhere between these two extremes. The scallop dredge fishery can also result in conflicts with other fisheries, particularly those using static gear for crabs and lobsters. This is due to both direct damage to crustaceans and seabed habitats, and occasional towing away of static gear by scallop dredgers.

3. Spatial management can improve sustainability and reduce conflicts:
Evidence from both the UK and overseas indicates that increased use of spatial management can improve both the sustainability of scallop fisheries, and reduce conflicts with other sea users. Permanent closed areas can protect sensitive seabed habitats and increase scallop brood stock, while rotational closed areas can protect scallop juveniles and increase yield per recruit. Such approaches have been used to spectacular success in the USA, Canada and most recently, France. A further innovative management system is currently being trialled off the Yorkshire coast. Here the North Eastern IFCA has designated several areas exclusively for scallop fishers. These have been set up in non-sensitive areas and guarantee exclusive seasonal access to permitted scallop fishing vessels. Analysis to date suggests that conflicts with other fishers have dramatically reduced, and that the sustainability and profitability of the fishery is rapidly improving.

4. Ecosystem based management of UK scallop fisheries is long overdue:
Given questions over the efficiency and sustainability of UK scallop fisheries, and the multitude and growing nature of other pressures on our seas, much broader use of innovative and ecosystem based approaches towards managing these fisheries is clearly long overdue. The current reform of UK fisheries management due to Brexit provides the ideal opportunity to do so.

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Short Presentations: Six x 3 min updates: Engaging with fishermen, Fisheries & MPAs

Gearing Up – The online tool helping fishermen find selectivity solutions to the Landing Obligation

Harriet Yates-Smith
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This presentation will cover:

- The challenges of the Landing Obligation.
- How the Gearing Up project is helping fishermen, net makers and fisheries managers find practical ways to reduce bycatch – or unwanted catches – in commercial fisheries.
- Introducing the Gearing Up tool, and how to use it!

Investing in Fishermen

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Executive Director – Fishing into the Future
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The UK demands world-class fisheries. We have the raw ingredients: the potential, desire, opportunity and motivations to bring this about; so, what can we do to manifest this change?

Imagine being a fisherman/fisherwoman. The complex interactions and networks at play within this industry - the relationships that underpin everything - are the glue through which the industry operates. Imagine a world where these relationships are supported, interactions between stakeholders are enhanced and fishermen have the right opportunities to contribute positively to both their industry and the management of the seas.

Now imagine a world where this does not happen; where key relationships between industry, science and management are undermined and where the opportunities to benefit from the potential embedded within the industry are not realised.

At Fishing into the Future, we are investing in supporting co-management of fisheries through our Sustainable Fisheries Education Programme. We bring people together to share insight, experience and understanding, giving fishermen opportunities to learn from and influence key fisheries regulators and build common ground. The marine environment is safer, after all, in the hands of engaged and well-informed fishermen. Contact us if you want to know more.

www.fishingintothefuture.co.uk

Sustainable Fish Education for Healthy Fish Recipes and a Healthy Ocean

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The Sustainable Fish Education group has been working in Devon and Cornwall for 5 years. They seek to spread knowledge about West Country fish and shellfish by running practical cookery sessions and talk and tasting events to showcase healthy seasonal fish dishes suitable for families.

The children prepare cook and taste the fish recipes and parents (and sometime grandparents) are invited to also taste and share the recipes for use at home.

We have worked with over 1,000 children and 600 parents in 20 primary schools and recently in a secondary school and have enthusiastic reviews from the staff. We also run storytelling, map and chart making, craft/art sessions. Local fishermen are often involved. We distribute the MSC good food guide and explain about sustainable fish and healthy oceans.

In 2019, we will be promoting herrings, mackerel, hake, dabs/flounders and mussels with the support of partners Cornwall Food Foundation and Bideford Sustainability group.

The Chief Executive officer of the SW Fish Producers Organisation said "Remember the fish buying customers of the future are in the primary schools now!"

We are supported by local funders and Seafish SW and North Devon Marine Pioneers and Blue Marine with information and have received EU grants through the Fisheries Local Action Groups

www.sustainablefisheducation.com f.appledoresustainablefisheducation

Sea's the Day: the fishermen of Selsey Bill

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A project about the Selsey fishing industry called 'Sea's the Day' is being funded by the Heritage Lottery Fund. Selsey Town Council successfully bid for the money with support from the Selsey fishery, Chichester District Council and the Manhood Peninsula Partnership.

The project aims to remind people about the fishery and the fishing heritage of Selsey by creating a snapshot of the current fishery and recording its past. The project will be dual function. In promoting the Selsey fishery it aims to benefit the fishery economically, but in raising its profile it will also benefit tourism, the largest economic generator on the peninsula.

This is how we're going to do it:

- Record stories and memories of fishermen and their families.
- Make a film (6-10 minutes) using the oral history interviews as a basis.
- Produce a short book using timed summaries of the interviews.
- Gather local catch recipes for use on recipe cards.
- Take photographs of fishermen at work to create pull-up banners.

The result of all this activity will be a nine month long exhibition in Chichester's Novium Museum starting June 2019. West Sussex Record Office will keep the project publicly available in perpetuity.

Web links / references:
Facebook page: https://www.facebook.com/Seas-the-Day-242070933144999/
Twitter Chichester District Council: @ChichesterDC
Twitter Selsey Town Council: #selseytowncouncil

IFCA Management of Inshore MPAs

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In 2012 the Government introduced a Revised Approach to the management of commercial fisheries in European marine sites (EMSs) to comply with Article 6 of the Habitats Directive. This ensured all existing and potential commercial fishing activities are subject to an assessment of their impact on EMSs and are appropriately managed to achieve the conservation objectives of the site. IFCAs are responsible for the delivery of this management for EMSs within 0-6 nautical miles of the coastline. Additionally, under the Marine and Coastal Access Act 2009 IFCAs are obligated to assess fishing activities and impacts for Marine Conservation Zones, with necessary management introduced within two years of designation.

An Association of IFCAs project has collated the MPA assessments undertaken by the IFCAs, together with the associated management measures, to create an online interactive Inshore Fisheries Management 'Hub'. This resource will provide public access to assessment data and management measures introduced to support the delivery of a well-managed network of MPAs in English inshore waters with the ability for viewers to interrogate a map of the sites and associated data. A promotional booklet will also highlight the progress made in managing fishing activities within inshore MPAs. These outputs will be available on the Association of IFCAs website from mid-February.

Association of IFCA website
http://www.association-ifca.org.uk/

Marine Protected Areas (MPAs) in Wales

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Wales has the potential to be a world leader in marine conservation. With 69% of inshore waters within an MPA and plans to fill gaps in the inshore and offshore through designating Marine Conservation Zones, the future should look positive. However, MCS has significant concerns over the management of Welsh MPAs.

Despite having sites since 2004, the 2018 Natural Resources Wales indicative review (see note 1) of the status of designated features, found about half are in unfavourable condition. Welsh Government has published a 5-year strategy and 1 year action plan for Welsh MPAs however, to date, there have been no new management measures or conservation objectives. Other emerging policies such as the Wales National Marine Plan (see note 2) and Marine Area Statement might support better MPA management.

There are currently no plans for reference site MPAs, and unlike England's Revised Approach, whereby all damaging fishing activities within European Marine Sites (EMS) were stopped until assessed, under the Assessing Welsh Fisheries Activities [AWFA] (see note 3), potentially damaging activities are still continuing. Local engagement has decreased with no equivalent to Inshore Fisheries and Conservation Authority Groups and reduction in number and capacity of EMS officers.

MCS website www.mcsuk.org

Note 1: Natural Resources Wales
https://naturalresources.wales/guidance-and-advice/environmental-topics/wildlife-and-biodiversity/find-protected-areas-of-land-and-seas/indicative-feature-condition-assessments-for-european-marine-sites-ems/?lang=en
Note 2: Wales Marine Planning planning portal
http://lle.gov.wales/apps/marineportal/#lat=52.5145&lon=-3.9111&z=8
Note 3: Assessing Welsh Fisheries Activities
https://naturalresources.wales/about-us/our-projects/marine-projects/assessing-welsh-fishing-activities/?lang=en

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The Whole Sites Approach – What do we want? Close bottom trawling over large areas (100s of kilometres square)

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Jeff Ardron's plenary speech, World Marine Biodiversity Conference, 2011, Aberdeen speaks volumes. He knows his stuff. He's worked on trawlers, has been Director General of the Marine Conservation Institute, Washington. Now he works as an advisor for the Commonwealth. He said back then:

"Fisheries have a greater impact on our marine environment than all other human impacts combined. Science has never been this good BUT the state of our marine ecosystems we are studying is at an all time low"

Ardron on MPAs: *"They work - they may be simplistic, they may be unscientific but they work - dammit!"*

But perhaps Jeff has it wrong. What is *scientific'*? Well its perspective has changed in the past 140 years. The 'scientific intervention' used to be the fishing back in the 1880s. The baseline state used to be 'relatively untouched'. The fishing industry now says that 'closed areas' and permanent 'no-take zones' are 'the experiments' that need to be proven to be applied. 140 years ago it was offshore

fishing moving from sail to steam trawl that was the experiment. We need to be mindful of this. When and why did this change?

Given that the UK is about to become an independent maritime state for the first time in a couple of generations, we can think about re-setting our baseline of how we want to manage our seas. The past 140 years has seen growth without true compromise. Silos of policy carving up the stake and use of the sea with no effective implementation of an ecosystem-based approach. I would argue that such an 'approach' needed to come in 140 years ago before we started advancing our trawler fleets into offshore waters. Such tardiness has meant that we haven't been able to challenge ingrained systems of governance, use and evidence requirements in order to effectively implement such a change. Innovations in 'environmentally friendly scallop dredges'; 'sunwing trawls'; 'pulse (electric) trawls' still mean we kill and eat fish as if they are meaningless elements of the ecosystems in MPAs. Ecological nonsense.

Significant bottom trawl closures are needed at the very least to achieve *many* elements of MSFD in one: Seafloor integrity, natural food webs being but two. Currently permanent, legal bottom trawl and dredge closures cover about 1.6% of our seafloor, whilst 16% of our seafloor habitats are in paper-park protected areas. Indeed, as a member of IUCN Commission protected areas only Lundy, Arran and Flamborough are domestic UK MPAs that can be internationally categorised as effective MPAs according to ICUN criteria. Yet the opportunity for recovery for these ecosystems is vast – with no need for active restoration. Recovery at sea would be relatively cheap. Some would call it re-wilding.

Simply closing areas to bottom towed gears will achieve much of the elements of recovery, and then allow us to move to managing effort of lower-impact use (see Devon and Severn IFCA's timeline of management after dealing with scalloping and trawling). Because of a failed application of law, the only 'closures' we have in the offshore environment are in and around offshore wind farms. At the moment, for inshore waters, we've only significantly protected areas that are already naturally protected – reefs. (i.e. not used by damaging fishing because the gear would be wrecked). This is particularly the case in England, whilst Scotland is at least protecting whole sites. Why are we setting meaningless Conservation Objectives for MPAs? Why allow Danish seining in a Marine Protected Area? It still kills fish that are structurally and functionally important parts of the marine ecosystem (fish are food for other marine life aren't they)? And why allow shrimp trawling in the Wash when industry and regulators should be actively forced by the law to look into developing passive trap fisheries? These two issues highlight the inability to deliver a whole-site approach.

Leaving the EU will allow us to close our MPAs, and indeed set up large offshore no-take zones where there would be measurable recovery. Some in the room may remember the MCZ stakeholder process that offered the least used sites for broadscale seabed features as MCZs. These should - of course - be entirely closed. We need to face down the activities that are truly stopping recovery of our protected areas and ban them. If displacement is a consequence – cut the number of boats. Otherwise we'll see no recovery, and the MPA project will have been a waste of time, as it currently seems to be for most sites.

References:
Lessons learned from an ecosystem-based management approach to restoration of a Californian estuary. Kerstin Wasson et al **Marine Policy 2015**
The effects of 118 years of industrial fishing on UK bottom trawl fisheries. Ruth Thurstan et al **Nature Communications (2010)**
Ecological Meltdown In the Firth of Clyde, Scotland: Two Centuries of Change In a Coastal Marine Ecosystem. Ruth Thurstan et al **PLOS 1 (2010)**
Origins of the bottom trawling controversy in the British Isles: 19th century witness testimonies reveal evidence of early fishery declines. Ruth H Thurstan et al, **Fish and Fisheries (2013)**
Can we manage coastal ecosystems to sequester more blue carbon? Peter Macreadie et al **Frontiers in Ecology (2017)**
Guidelines for applying the IUCN Protected Area Management Categories to Marine Protected Areas (2012). **Jon Day et al.** IUCN. Gland, Switzerland: 36pp

https://www.iucn.org/content/guidelines-applying-iucn-protected-area-management-categories-marine-protected-areas-0

National Marine Parks: Background case and discussion

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The UK's National Parks are long established and well loved by the public, but are all on land. Currently, the UK has no similar concept in the marine environment, which can give the impression that we value our seas much less than our land – which may well be the case for many. In this talk I will look at why we need a similar concept for our seas, assess the lessons we can learn from the experience of national parks on land, and discuss how a National Marine Park may be the vehicle for engagement with the public that is required to enable much more connection with the sea for conservation, economic and health and wellbeing benefits. The plans for the first National Marine Park in the waters off Plymouth will be introduced.

Web-links and/or references
https://www.plymouth.ac.uk/staff/martin-attrill

Well managed Marine Protected Areas (MPAs) in the UK- what does this mean and how do we achieve it?

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More than 20% of UK waters are designated as Marine Protected Areas (MPAs). But for these MPAs to really work and deliver benefits to wildlife and people, we need them to be well-managed – where activities like tourism or fishing are managed in a sustainable way.

UK SEAS is a five year WWF-led project initially focussing on two case study areas – North Devon and the Outer Hebrides, and will share lessons across the UK and beyond. We're working to improve the way that MPAs are managed, to secure a future for important industries, communities and nature. The project is funded through a partnership between WWF and Sky Ocean Rescue.

We are developing 'the compass' which uses criteria covering a range of issues to evaluate how well MPAs are being managed, to understand where we are doing well and which aspects we need to focus on for improvement.

The aim of the project is to improve management of MPAs in case study areas, and develop tools and approaches for sharing. We are working in the following areas:

- Taking a fresh look at marine governance structures
- Investigating and implementing sustainable funding for MPAs
- Engaging the local communities with their seas

For more information on the project, please see:
https://ukseasproject.org.uk/
Twitter: @UKSEAS_project

Recovery of Horse Mussel Communities in Strangford Lough

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Fifteen years ago at Coastal Futures 2003, David Erwin, founder member of the Marine Conservation Society and then Chair of the Ulster Wildlife Trust, presented a damming indictment on the management of Strangford Lough. His paper focused on the mismanagement over the previous 40 years on what at the time was one of Europe's most highly protected marine sites and how the lack of adequate fishery protection measures had resulted in the destruction of almost all of the Modiolus Biogenic reefs by trawling and dredging for scallops.

Ulster Wildlife lodged a complaint with the European Commission which initiated a raft of measures and actions including Infraction Proceedings. Eleven months after David's paper, the Department introduced a total ban on mobile gear, commissioned research into the ecological status of the Lough, agreed a restoration plan with the European Commission, attempted artificial restoration, closed areas to diving, mooring and anchoring, and the introduction of a restrictive permitting system for sustainable pot fishing.

After a workshop comprising renowned experts on biogenic reefs in 2011, it was agreed that natural recovery was more likely to be successful than small scale artificial restoration. I am pleased to report that surveys conducted by the Department in 2018 are indicating that the Lough is returning to a natural system as indicated by the presence of clumped Modiolus and species which were reported previously as absent.

The Department is now in a position to report to Europe that Strangford Lough is still 'Unfavourable but recovering'. Tightly regulated sustainable fishing is permitted within the Lough and deemed productive. The measures introduced by the Department in December 2003 and subsequent years would nowadays be described as a Re-wilding Project. We have removed anthropogenic disturbance and are allowing nature to take its course. This paper will present some of the evidence on which this assertion is made.

https://www.daera-ni.gov.uk/topics/marine
https://appsd.daera-ni.gov.uk/marinemapviewer/